

List of Publications

Horst Bunke

(2009)

Reviewed Journal Papers

1. K. Riesen and H. Bunke. Graph classification by means of Lipschitz embedding. *IEEE Trans. SMC*. (accepted for publication).
2. M. Liwicki, H. Bunke, J. Pittman, and S. Knerr. Combining diverse systems for handwritten text line recognition. *Machine Vision and Applications*. (accepted for publication).
3. M. Ferrer, E. Valveny, F. Serratos, K. Riesen, and H. Bunke. Generalized median graph computation by means of graph embedding in vector spaces. *Pattern Recognition*. (accepted for publication).
4. M. Neuhaus, K. Riesen, and H. Bunke. Novel kernels for error-tolerant graph classification. *Spatial Computing*, 22(5):425–441, 2009.
5. M. Liwicki and H. Bunke. Feature selection for HMM and BLSTM based handwriting recognition of whiteboard notes. *Int. Journal of Pattern Recognition and Art. Intelligence*, 23(5):907–923, 2009.
6. M. Liwicki and H. Bunke. Combining diverse on-line and off-line systems for handwritten text line recognition. *Pattern Recognition*, 42(12):3254–3263, 2009.
7. K. Riesen and H. Bunke. Graph classification based on vector space embedding. *Int. Journal of Pattern Recognition and Art. Intelligence*, 23(6):1053–1081, 2009.
8. A. Graves, M. Liwicki, S. Fernandez, R. Bertolami, H. Bunke, and J. Schmidhuber. A novel connectionist system for unconstrained handwriting recognition. *IEEE Trans. PAMI*, 31(5):855–869, 2009.
9. K. Riesen and H. Bunke. Reducing the dimensionality of dissimilarity space embedding graph kernels. *Engineering Applications of Artificial Intelligence*, 22(1):48–56, 2009.
10. K. Riesen and H. Bunke. Approximate graph edit distance computation by means of bipartite graph matching. *Image and Vision Computing*, 27(7):950–959, 2009.
11. R. Bertolami and H. Bunke. Integration of n-gram language models in multiple classifier systems for offline handwritten text line recognition. *Int. Journal of Pattern Recognition and Art. Intelligence*, 22(7):1301–1321, 2008.
12. R. Bertolami and H. Bunke. Hidden Markov model based ensemble methods for offline handwritten text line recognition. *Pattern Recognition*, 41(11):3452–3460, 2008.
13. A. Schlapbach, M. Liwicki, and H. Bunke. A writer identification system for on-line whiteboard data. *Pattern Recognition*, 41(7):2381–2397, 2008.
14. C. Irniger and H. Bunke. Decision trees for filtering large databases of graphs. *Int. Journal of Intelligent Systems Technologies*, 3:166–187, 2007.

15. M. Neuhaus and H. Bunke. Automatic learning of cost functions for graph edit distance. *Information Sciences*, 177(1):239–247, 2007.
16. M. Liwicki and H. Bunke. Handwriting recognition of whiteboard notes – studying the influence of training set size and type. *Int. Journal of Pattern Recognition and Art. Intelligence*, 21(1):83–98, 2007.
17. A. Schlapbach and H. Bunke. A writer identification and verification system using HMM based recognizers. *Pattern Analysis and Applications*, 10(1):33–43, 2007.
18. R. Bertolami, M. Zimmermann, and H. Bunke. Rejection strategies for offline handwritten text line recognition. *Pattern Recognition Letters*, 27(16):2005–2012, 2006.
19. Z. Reynolds, H. Bunke, M. Last, and A. Kandel. Comparing representative selection strategies for dissimilarity representations. *Int. Journal of Intelligent Systems*, 21(10):1093–1109, 2006.
20. M. Neuhaus and H. Bunke. Edit distance based kernel functions for structural pattern classification. *Pattern Recognition*, 39:1852–1863, 2006.
21. X. Jiang, C. Marti, Ch. Irniger, and H. Bunke. Distance measures for image segmentation evaluation. *EURASIP Journal on Applied Signal Processing*, 2006:1–10, 2006.
22. Z. Ding, H. Bunke, O. Kipersztok, M. Schneider, and A. Kandel. Fuzzy timed Petri net – analysis and implementation. *Mathematical and Computer Modelling*, 43:385–400, 2006.
23. H. Bunke, P. Dickinson, C. Irniger, and M. Kraetzl. Recovery of missing information in graph sequences by means of reference pattern matching and decision tree learning. *Pattern Recognition*, 39:573–586, 2006.
24. M. Zimmermann, J.-C. Chappelier, and H. Bunke. Offline grammar-based recognition of handwritten sentences. *IEEE Trans. PAMI*, 18(5):818–821, 2006.
25. Z. Ding, H. Bunke, M. Schneider, and A. Kandel. Fuzzy timed Petri net – definitions, properties and applications. *Mathematical and Computer Modelling*, 41:345–360, 2005.
26. M. Neuhaus and H. Bunke. Self-organizing maps for learning the edit costs in graph matching. *IEEE Trans. SMC*, 35(3):503–514, 2005.
27. S. Günter and H. Bunke. Off-line cursive handwriting recognition using multiple classifier systems – on the influence of vocabulary, ensemble, and training set size. *Optics and Lasers in Engineering*, 43:437–454, 2005.
28. P. Dickinson, H. Bunke, A. Dadej, and M. Kraetzl. Matching graphs with unique node labels. *Pattern Analysis and Applications*, 7(3):243–254, 2004.
29. S. Dick, A. Meeks, M. Last, H. Bunke, and A. Kandel. Data mining in software metrics databases. *Fuzzy Sets and Systems*, 145:81–110, 2004.
30. S. Günter and H. Bunke. Multiple classifier systems in off-line handwritten word recognition – on the influence of training set and vocabulary size. *Int. Journal of Pattern Recognition and Art. Intelligence*, 18(7):1303–1320, 2004.
31. T. Varga and H. Bunke. Off-line handwritten word recognition using synthetic training data produced by means of a geometrical distortion model. *Int. Journal of Pattern Recognition and Art. Intelligence*, 18(7):1285–1302, 2004.
32. P.J. Dickinson, M. Kraetzl, H. Bunke, M. Neuhaus, and A. Dadej. Similarity measures for hierarchical representations of graphs with unique node labels. *Int. Journal of Pattern Recognition and Art. Intelligence*, 18:425–442, 2004.

33. S. Günter and H. Bunke. Handwritten word recognition using classifier ensembles generated from multiple prototypes. *Int. Journal of Pattern Recognition and Art. Intelligence*, 18(5):957–974, 2004.
34. S. Günter and H. Bunke. Optimization of weights in a multiple classifier handwritten word recognition system using a genetic algorithm. *Electronic Letters of Computer Vision and Image Analysis*, 3(1):25–44, 2004.
35. A. Schenker, M. Last, H. Bunke, and A. Kandel. Classification of web documents using graph matching. *Int. Journal of Pattern Recognition and Art. Intelligence*, 18(3):475–496, 2004.
36. S. Günter and H. Bunke. Feature selection algorithms for the generation of multiple classifier systems and their application to handwritten word recognition. *Pattern Recognition Letters*, 25:1323–1336, 2004.
37. S. Günter and H. Bunke. HMM-based handwritten word recognition: on the optimization of the number of states, training iterations and Gaussian components. *Pattern Recognition*, 37:2069–2079, 2004.
38. W. Rodriguez, M. Last, A. Kandel, and H. Bunke. Three-dimensional curve similarity using string matching. *Robotics and Autonomous Systems*, 49(3-4):165–172, 2004.
39. A. Vinciarelli, S. Bengio, and H. Bunke. Offline recognition of unconstrained handwritten texts using HMMs and statistical language models. *IEEE Trans. PAMI*, 26:709–720, 2004.
40. X. Jiang, K. Abegglen, H. Bunke, and J. Csirik. Dynamic computation of generalised median strings. *Pattern Analysis and Applications*, 6:185–193, 2003.
41. S. Günter and H. Bunke. Validation indices for graph clustering. *Pattern Recognition Letters*, 24(8):1107–1113, 2003.
42. H. Bunke, M. Gori, M. Hagenbuchner, Ch. Irniger, and A. Tsoi. Using attributed plex grammars for the generation of image and graph databases. *Pattern Recognition Letters*, 24(8):1081–1087, 2003.
43. S. Günter and H. Bunke. Ensembles of classifiers for handwritten word recognition. *Journal on Document Analysis and Recognition*, 5(4):224–232, 2003.
44. A. Schenker, M. Last, H. Bunke, and A. Kandel. Fuzzy clustering with genetically adaptive scaling. *Journal of Image and Graphics*, 2:557–572, 2002.
45. S. Günter and H. Bunke. Self-organizing map for clustering in the graph domain. *Pattern Recognition Letters*, 23:401–417, 2002.
46. K. Sobottka and H. Bunke. Investigating anytime algorithms for future distance warning systems. *Real-Time Imaging*, 8(1):61–71, 2002.
47. H. Bunke, X. Jiang, K. Abegglen, and A. Kandel. On the weighted mean of a pair of strings. *Pattern Analysis and Applications*, 5:23–30, 2002.
48. S. Fischer and H. Bunke. Automatic identification of diatoms using visual human-interpretable features. *Journal of Image and Graphics*, 2(1):67–88, 2002.
49. H. Bunke, M. Kraetzl, P. Shoubridge, and W.D. Wallis. Detection of abnormal change in time series of graphs. *Journal of Interconnection Networks*, 3, Nos 1+2:85–101, 2002.
50. M. Last, H. Bunke, and A. Kandel. A feature-based serial approach to classifier combination. *Pattern Analysis and Applications*, 5:385–398, 2002.

51. U.-V. Marti and H. Bunke. The IAM-database: an English sentence database for offline handwriting recognition. *Journal on Document Analysis and Recognition*, 5:39–46, 2002.
52. X. Jiang, A. Münger, and H. Bunke. On median graphs: properties, algorithms, and applications. *IEEE Trans. PAMI*, 23(10):1144–1151, 2001.
53. U.-V. Marti and H. Bunke. Using a statistical language model to improve the performance of an HMM-based cursive handwriting recognition system. *Journal of Pattern Recognition and Art. Intelligence* 15, 15:65–90, 2001.
54. K. Yu, X. Jiang, and H. Bunke. Sentence lipreading using hidden Markov model with integrated grammar. *Journal of Pattern Recognition and Art. Intelligence*, 15:161–176, 2001.
55. K. Shearer, H. Bunke, and S. Venkatesh. Video indexing and similarity retrieval by largest common subgraph detection using decision trees. *Pattern Recognition*, 34:1075–1091, 2001.
56. K. Shearer, S. Venkatesh, and H. Bunke. Video sequence matching via decision tree path following. *Pattern Recognition Letters*, 22:479–492, 2001.
57. M. Schneider, H. Bunke, and A. Kandel. Using fuzzy logic to match strings in documents. *Journal of Intelligent Systems*, 16:609–619, 2001.
58. W. Rodriguez, M. Last, A. Kandel, and H. Bunke. Geometric approach to datamining. *Journal of Image and Graphics*, 1(2):363–386, 2001.
59. H. Bunke and S. Günter. Weighted mean of a pair of graphs. *Computing*, 67(3):209–224, 2001.
60. R. Baechler, H. Bunke, and L.-P. Nolte. Restricted surface matching—numerical optimization and technical evaluation. *Computer Aided Surgery*, 6:143–152, 2001.
61. H. Bunke, X. Fabregas, and A. Kandel. Rule-based object similarity. *Mathware and Soft Computing*, 8:113–128, 2001.
62. H. Bunke and A. Kandel. Mean and maximum common subgraph of two graphs. *Pattern Recognition Letters*, 21:163–168, 2000.
63. X. Jiang, M. Binkert, B. Achermann, and H. Bunke. Towards detection of glasses in facial images. *Pattern Analysis and Applications*, 3:9–18, 2000.
64. W. Rodriguez, H.-N. Teodorescu, F. Grigoras, A. Kandel, and H. Bunke. A fuzzy information space approach to speech signal non-linear analysis. *Journal of Intelligent Systems*, 15(4):343–363, 2000.
65. B. Messmer and H. Bunke. Efficient subgraph isomorphism detection: a decomposition approach. *IEEE Trans. KDE*, 12(2):307–323, 2000.
66. X. Jiang, H. Bunke, and U. Meier. High-level feature based range image segmentation. *Image and Vision Computing*, 18(10):817–822, 2000.
67. G. Kaufmann and H. Bunke. Automated reading of cheque amounts. *Pattern Analysis and Applications*, 3:132–141, 2000.
68. K. Sobottka, H. Kronenberg, T. Perroud, and H. Bunke. Text extraction from colored book and journal covers. *Journal of Document Analysis and Recognition*, 2(4):163–176, 2000.
69. G. Kaufmann and H. Bunke. Detection and correction of recognition errors in check reading. *Journal of Document Analysis and Recognition*, 2(4):211–221, 2000.

70. E. Bokshtein, D. Shmaltz, O. Herbst, H. Bunke, and A. Kandel. Monopulse amplitude direction-finding using neuro-fuzzy approach. *Robotics and Autonomous Systems*, 33:125–134, 2000.
71. H. Bunke, X. Jiang, and A. Kandel. On the minimum common supergraph of two graphs. *Computing*, 65(1):13–25, 2000.
72. H. Bunke. Graph matching for visual object recognition. *Spatial Vision*, 13:335–340, 2000.
73. X. Jiang and H. Bunke. Optimal vertex ordering of graphs. *Information Processing Letters*, 72:149–154, 1999.
74. H. Bunke. Error correcting graph matching: On the influence of the underlying cost function. *IEEE Trans. PAMI*, 21(9):917–922, 1999.
75. X. Jiang and H. Bunke. Edge detection in range images based on scan line approximation. *Computer Vision and Image Understanding*, 73(2):183–199, 1999.
76. X. Jiang and H. Bunke. Optimal quadratic-time isomorphism of ordered graphs. *Pattern Recognition*, 32:1273–1283, 1999.
77. H. Bunke and M. Zumbühl. Acquisition of 2D shape models from scenes with overlapping objects using string matching. *Pattern Analysis and Applications*, 2(1):2–9, 1999.
78. K. Yu, X. Jiang, and H. Bunke. Lipreading using signal analysis over time. *Signal Processing*, 77(2):195–208, 1999.
79. B. Messmer and H. Bunke. A decision tree approach to graph and subgraph isomorphism detection. *Pattern Recognition*, 32(12):1979–1998, 1999.
80. W. Rodriguez, H.-N. Teodorescu, A. Kandel, and H. Bunke. A fuzzy information space approach to movement nonlinear analysis. *Int. Journal of Chaos Theory and Applications*, 3(1–2):29–37, 1999.
81. H. Bunke, A. Münger, and X. Jiang. Combinatorial search versus genetic algorithms: a case study based on the generalized mean graph problem. *Pattern Recognition Letters*, 20:1271–1277, 1999.
82. T.M. Ha, M. Zimmermann, and H. Bunke. Off-line handwritten numeral string recognition by combining segmentation-based and segmentation-free methods. *Pattern Recognition*, 31(3):257–272, 1998.
83. B.T. Messmer and H. Bunke. A new algorithm for error-tolerant subgraph isomorphism detection. *IEEE Trans. PAMI*, 20:493–505, 1998.
84. H. Bunke and K. Shearer. A graph distance metric based on the maximal common subgraph. *Pattern Recognition Letters*, 19(3–4):255–259, 1998.
85. K. Shearer, H. Bunke, S. Venkatesh, and D. Kieronska. Efficient graph matching for video indexing. *Computing, Suppl 12 (Graph Based Representations in Pattern Recognition)*, pages 53–62, 1998.
86. X. Jiang and H. Bunke. On the coding of ordered graphs. *Computing*, 61(1):23–38, 1998.
87. B.T. Messmer and H. Bunke. Error-correcting graph isomorphism using decision trees. *Journal of Pattern Recognition and Art. Intelligence*, 12(6):721–742, 1998.
88. H. Bunke. On a relation between graph edit distance and maximum common subgraph. *Pattern Recognition Letters*, 18(8):689–694, 1997.

89. K. Yu, X. Jiang, and H. Bunke. Lipreading: A classifier combination approach. *Pattern Recognition Letters*, 18(11–13):1421–1426, 1997.
90. J. Lladós, H. Bunke, and E. Martí. Finding rotational symmetries by cyclic string matching. *Pattern Recognition Letters*, 18(14):1435–1442, 1997.
91. S.V. Rice, H. Bunke, and T. Nartker. Classes of cost functions for string edit distance. *Algorithmica*, 18(2):271–280, 1997.
92. H. Bunke and B. Messmer. Recent advances in graph matching. *Journal of Pattern Recognition and Art. Intelligence*, 11(1):169–203, 1997.
93. T.M. Ha and H. Bunke. Off-line handwritten numeral recognition by perturbation method. *IEEE Trans. PAMI*, 19(5):535–539, 1997.
94. A. Hoover, G. Jean-Baptiste, X. Jiang, P. Flynn, H. Bunke, D. Goldgof, K. Bowyer, D. Egger, A. Fitzgibbon, and R. Fisher. An experimental comparison of range image segmentation algorithms. *IEEE Trans. PAMI*, 18(7):673–689, 1996.
95. X. Jiang, K. Yu, and H. Bunke. Detection of rotational and involutorial symmetries and congruity of polyhedra. *The Visual Computer*, 12(4):193–201, 1996.
96. H. Bunke and J. Csirik. Parametric string distance and its application to pattern recognition. *IEEE Trans. SMC*, 26(1):202–206, 1995.
97. H.-S. Tu, A. Matheny, D. Goldgof, and H. Bunke. Left ventricular boundary detection from spatio-temporal volumetric computed tomography images. *Computerized Medical Imaging and Graphics*, 19(1):27–46, 1995.
98. X. Jiang and H. Bunke. Line segment based axial motion stereo. *Pattern Recognition*, 28(4):553–562, 1995.
99. H. Bunke and J. Csirik. An improved algorithm for computing the edit distance of run-length coded strings. *Inf. Proc. Letters* 54, pages 93–96, 1995.
100. X. Jiang and H. Bunke. Optimal implementation of morphological operations on neighborhood-connected parallel computers. *Annals of Mathematics and Art. Intell.*, 13:301–315, 1995.
101. H. Bunke. Fast approximate matching of words against a dictionary. *Computing*, 55(1):75–89, 1995.
102. T. Ha, D. Niggeler, H. Bunke, and J. Clarinval. Giro form reading machine. *Optical Engineering*, 34(8):2277–2288, 1995.
103. H. Bunke, M. Roth, and E.G. Schukat-Talamazzini. Off-line handwriting recognition using hidden Markov models. *Pattern Recognition*, 28(9):1399–1413, 1995.
104. J. Dvorak and H. Bunke. Concept and realization of a hybrid ai tool applied to computer vision. *Journal of Artificial Intelligence Tools*, 3(4):451–466, 1995.
105. X. Jiang and H. Bunke. Fast segmentation of range images into planar regions by scan line grouping. *Machine Vision and Applications*, 7:115–122, 1994.
106. F. Grimm, H. Bunke, and J. Haehlen. An approach to expert systems for image processing software libraries. *Mathematics and Computers in Simulation*, 36:303–313, 1994.
107. T. Yamasaki and H. Bunke. Kansei information processing for handwritten document. *The Institute of Electronics, Information and Communication Engineers*, pages 117–122, 1994.
108. T.M. Ha and H. Bunke. Model-based analysis and understanding of check forms. *Int. Journal of Pattern Recognition and Art. Intelligence*, 8(5):1053–1080, 1994.

109. X.-Y. Jiang and H. Bunke. An optimal algorithm for extracting the regions of a plane graph. *Pattern Recognition Letters*, 14(7):553–558, 1993.
110. R. Sastry, N. Ranganathan, and H. Bunke. VLSI architectures for polygon recognition. *IEEE Trans. on VLSI Systems.*, 1(4):398–407, 1993.
111. F. Grimm and H. Bunke. An expert system for the selection and application of image processing subroutines. *Expert Systems*, 10(2):61–74, 1993.
112. H. Bunke and J. Csirik. An algorithm for matching run-length coded strings. *Computing*, 50(4):297–314, 1993.
113. H. Bunke and T. Glauser. Viewpoint independent representation and recognition of polygonal faces in 3-d. *IEEE Trans. on Robotics and Automation*, 9(4):457–463, 1993.
114. H. Bunke and U. Bühler. Applications of approximate string matching to 2D shape recognition. *Pattern Recognition*, 26(12):1797–1812, 1993.
115. X.-Y. Jiang and H. Bunke. A simple and efficient algorithm for determining the symmetries of polyhedra. *CVGIP: Graphical Models and Image Processing*, 54(1):91–95, 1992.
116. X.-Y. Jiang and H. Bunke. Simple and fast computation of moments. *Pattern Recognition*, 24(8):801–806, 1991.
117. X.-Y. Jiang and H. Bunke. On error analysis for surface normals determined by photometric stereo. *Signal Processing*, 23(3):221–226, 1991.
118. M. Song, F. Grimm, and H. Bunke. A prototype expert system for automatic generation of image processing programs. *Journal of Computer Science and Technology*, 6(3):296–300, 1991.
119. X.-Y. Jiang and H. Bunke. Segmentation of the needle map of objects with curved surfaces. *Pattern Recognition Letters*, 10:181–187, 1989.
120. H. Bunke and J. Dvorak. Rule-based expert system shells – new software tools for pattern recognition? *Int. Journal of Pattern Recognition and Artificial Intelligence*, 3(1):85–102, 1989.
121. M. Stolze and H. Bunke. INDEX – a diagnostic expert system for a mail inserter machine. *Microcomputer Applications*, 8(1):27–33, 1989.
122. H. Niemann, I. Hofmann, G. Sagerer, and H. Bunke. An expert system for the diagnostic description of scintigraphic images from the beating heart. *Innovation et technologie en biologie et médecine*, 8(2):119–132, 1987.
123. H. Niemann, H. Bunke, I. Hofmann, G. Sagerer, F. Wolf, and H. Feistl. A knowledge based system for analysis of gated blood pool studies. *IEEE Trans. PAMI*, 7(3):246–259, 1985.
124. H. Bunke and C. Allermann. Inexact graph matching for structural pattern recognition. *Pattern Recognition Letters*, 1:245–253, 1983.
125. H. Bunke. Understanding of circuit diagrams by means of probabilistic relaxation. *Signal Processing*, 4:169–180, 1982.
126. H. Bunke. On the Generative Power of Sequential and Parallel Programmed Graph Grammars. *Computing*, 29:89–112, 1982.
127. H. Bunke. Attributed programmed graph grammars and their application to schematic diagram interpretation. *IEEE Trans. PAMI*, 4(6):574–582, 1982.

Books and Special Issues of Journals

1. H. Bunke, J. J. Villanueva, G. Sanchez, and X. Otazu, editors. *Progress in Computer Vision and Image Analysis*. World Scientific, 2009.
2. M. Cheriet, H. Bunke, J. Hu, F. Kimura, and Ch. Suen, editors. *New Frontiers in Handwriting Recognition*, volume 42(12) of *Pattern Recognition*. 2009.
3. H. Bunke, A. Kandel, and M. Last, editors. *Applied Pattern Recognition*. Springer, 2008.
4. M. Liwicki and H. Bunke. *Recognition of Whiteboard Notes – Online, Offline and Combination*. World Scientific, 2008.
5. M. Neuhaus and H. Bunke. *Bridging the Gap between Graph Edit Distance and Kernel Machines*, volume 68 of *Machine Perception and Artificial Intelligence*. World Scientific, 2007.
6. H. Bunke, P. Dickinson, M. Kraetzl, and W. Wallis. *A Graph-Theoretic Approach to Network Dynamics*, volume 24 of *Progress in Computer Science and Applied Logic*. Birkhäuser Boston, 2007.
7. A. Kandel, H. Bunke, and M. Last, editors. *Applied Graph Theory in Computer Vision and Pattern Recognition*, volume 52 of *Studies in Computational Intelligence*. Springer, 2007.
8. H. Bunke and L.A. Spitz, editors. *Document Analysis Systems VII, Proc. 7th Int. Workshop, DAS 2006*, volume 3872 of *Lecture Notes in Computer Science*. Springer, 2006.
9. M. Basu, H. Bunke, and A. Del Bimbo, editors. *Syntactic and Structural Pattern Recognition*, volume 7(27) of *Special Section of IEEE Trans. PAMI*. World Scientific, 2005.
10. A. Schenker, A. Kandel, H. Bunke, and M. Last. *Graph Theoretic Techniques for Web Content Mining*. World Scientific, 2005.
11. M. Last, A. Kandel, and H. Bunke, editors. *Data Mining in Time Series Databases*. World Scientific, 2004.
12. M. Last, A. Kandel, and H. Bunke, editors. *Artificial Intelligence Methods in Software Testing*. World Scientific, 2004.
13. H. Bunke and T. Caelli, editors. *Graph Matching in Pattern Recognition and Machine Vision*. Number 18(3) in Special Issue of *Int. Journal of Pattern Recognition and Art. Intelligence*. World Scientific, 2004.
14. H. Bunke and A. Kandel, editors. *Hybrid Methods in Pattern Recognition*. World Scientific, 2002.
15. A. Kandel, H. Bunke, and M. Last, editors. *Graphical Methods in Data Mining*, volume 2(1) of *Special Issue of Int. Journal of Image and Graphics*. World Scientific, 2002.
16. G.D. Hager, H.I. Christensen, H. Bunke, and R. Klein, editors. *Sensor Based Intelligent Robots*, volume 2238 of *Lecture Notes in Computer Science*. Springer, 2002.
17. X. Jiang and H. Bunke, editors. *Image/Video Indexing and Retrieval*, volume 22(5) of *Special Issue of Pattern Recognition Letters*. Elsevier Science Inc., 2001.
18. H. Bunke and T. Caelli, editors. *Hidden Markov Models in Vision*. World Scientific, 2001. also available as Special Issue of *Int. Journal of Pattern Recognition and Art. Intelligence*, Vol 15, No. 1.
19. A. Kandel, M. Last, and H. Bunke, editors. *Data Mining and Computational Intelligence*. Physica Verlag, 2001.

20. H. Bunke and A. Kandel, editors. *Neuro-Fuzzy Pattern Recognition*. World Scientific, 2000.
21. H. Christensen, H. Bunke, and H. Noltemeier, editors. *Sensor Based Intelligent Robots*. Number 1724 in Lecture Notes on Artificial Intelligence. Springer, 1999.
22. H. Bunke and Wang. P., editors. *Handbook of Character Recognition and Document Image Analysis*. World Scientific, 1997.
23. R.C. Bolles, H. Bunke, and H. Noltemeier, editors. *Intelligent Robots – Sensing, Modeling and Planning*. World Scientific, 1997.
24. T. Caelli, H. Bunke, and P. Lam, editors. *Spatial Computing: Issues in Vision, Multimedia and Visualization*. World Scientific, Singapore, 1997. also available as Special Issue of Int. Journal of Pattern Recognition and Art. Intelligence, Vol 11, Nos 1 & 2.
25. S. Impedovo, P. Wang, and H. Bunke, editors. *Automatic Bankcheck Processing*. World Scientific, 1997.
26. X. Jiang and H. Bunke. *Dreidimensionales Computersehen - Gewinnung und Analyse von Tiefenbildern*. Springer, 1996.
27. H. Bunke, T. Kanade, and H. Noltemeier, editors. *Modelling and Planning for Sensor Based Intelligent Robot Systems*. World Scientific, 1995.
28. J. Csirik and H. Bunke, editors. *Formal Methods in 2-D Shape Analysis*, volume 13(3 & 4) of *Special Issue of Annals of Mathematics and Artificial Intelligence*. 1995.
29. K.L. Boyer, L. Stark, and H. Bunke, editors. *Applications of AI, Machine Vision and Robotics*. World Scientific, 1994. Also available as special issue of Int. Journal of Pattern Recognition and Art. Intelligence.
30. H. Bunke, P. Wang, and H. Baird, editors. *Document Image Analysis*, volume 8(5) of *Special Issue of Int. Journal of Pattern Recognition and Artificial Intelligence*. World Scientific, 1994. Also available as special issue of Int. Journal of Pattern Recognition and Art. Intelligence.
31. H. Bunke, editor. *Advances in Structural and Syntactic Pattern Recognition*. World Scientific, 1993.
32. H. Christensen, K. Bowyer, and H. Bunke, editors. *Active Robot Vision*. World Scientific, Singapore, 1993.
33. H. Baird, H. Bunke, and K. Yamamoto, editors. *Structured Document Image Analysis*. Springer-Verlag, 1992.
34. H. Bunke and A. Sanfeliu, editors. *Syntactic and Structural Pattern Recognition – Theory and Applications*. World Scientific Publ. Co., Singapore, 1990.
35. H. Bunke, editor. *Artificial Intelligence in Manufacturing, Assembly, and Robotics*. Oldenbourg Verlag, Munich, 1988.
36. H. Bunke, O. Kübler, and P. Stucki, editors. *Mustererkennung '88*, volume 180 of *Informatik Fachberichte*. Springer-Verlag, 1988.
37. G. Ferrate, T. Pavlidis, A. Sanfeliu, and H. Bunke, editors. *Syntactic and Structural Pattern Recognition*. NATO ASI Series. Springer-Verlag, 1988.
38. H. Bunke and H. Mey, editors. *Künstliche Intelligenz und Expertensysteme*. Verlag Lang, Bern, 1987.

39. H. Niemann and H. Bunke. *Künstliche Intelligenz in Bild- und Sprachanalyse*. Teubner Verlag, Stuttgart, 1987.
40. H. Bunke and A. Sanfeliu, editors. *Advances in Syntactic Pattern Recognition*, volume 19 of *Special Issue of Pattern Recognition*. Pergamon Press, 1986.
41. H. Bunke. *Modellgesteuerte Bildanalyse*. Teubner Verlag, Stuttgart, 1985.

Reviewed Papers in Conference Proceedings and Edited Books

1. Indermühle E, H. Bunke, F. Shafait, and T. Breuel. Text vs. non-text distinction in online handwritten documents. In *Proc. 25th ACM Symposium on Applied Computing*, 2010. (accepted for publication).
2. A. Fischer, M. Wüthrich, M. Liwicki, V. Frinken, H. Bunke, G. Viehhauser, and M. Stolz. Automatic transcription of handwritten medieval documents. In *Proc. 15th Int. Conf. on Virtual Systems and Multimedia*, volume 1, pages 211–215, 2009.
3. M. Ferrer, E. Valveny, F. Serratos, and H. Bunke. Graph-based k-means clustering: a comparison of the set versus the generalized median graph. In X. Jiang and N. Petkov, editors, *Proc. 13th Int. Conf. on Computer Analysis of Images and Patterns*, LNCS 5702, pages 342–350. Springer, 2009.
4. K. Riesen and H. Bunke. Feature ranking algorithms for improving classification of vector space embedded graphs. In X. Jiang and N. Petkov, editors, *Proc. 13th Int. Conf. on Computer Analysis of Images and Patterns*, LNCS 5702, pages 377–384. Springer, 2009.
5. A. Fischer and H. Bunke. Kernel PCA for HMM-based cursive handwriting recognition. In N. Jiang, X. and Petkov, editor, *Proc. 13th Int. Conf. on Computer Analysis of Images and Patterns*, volume 1 of LNCS 5702, pages 181–188. Springer, 2009.
6. V. Frinken, T. Peter, A. Fischer, H. Bunke, T.-M.-T. Do, and T. Artieres. Improved handwriting recognition by combining two forms of hidden Markov models and a recurrent neural network. In N. Jiang, X. and Petkov, editor, *Proc. 13th Int. Conf. on Computer Analysis of Images and Patterns*, LNCS 5702, pages 189–196. Springer, 2009.
7. A. Fornes, J. Lladós, G. Sanchez, and H. Bunke. Symbol independent writer identification in old handwritten music scores. In *Proc. 8th Int. Workshop on Graphics Recognition*, pages 186–197, 2009.
8. A. Fornes, J. Lladós, G. Sanchez, and H. Bunke. On the use of textural features for writer identification in old handwritten music scores. In *Proc. 10th Int. Conf. on Document Analysis and Recognition*, volume 2, pages 996–1000, 2009.
9. M. Wüthrich, M. Liwicki, A. Fischer, E. Indermühle, H. Bunke, G. Viehhauser, and M. Stolz. Language model integration for the recognition of handwritten medieval documents. In *Proc. 10th Int. Conf. on Document Analysis and Recognition*, volume 1, pages 211–215, 2009.
10. V. Frinken and H. Bunke. Evaluating retraining rules for semi-supervised learning in neural network based cursive word recognition. In *Proc. 10th Int. Conf. on Document Analysis and Recognition*, volume 1, pages 31–35, 2009.
11. E. Indermühle, M. Liwicki, and H. Bunke. Combining alignment results for historical handwritten document analysis. In *Proc. 10th Int. Conf. on Document Analysis and Recognition*, volume 3, pages 1186–1190, 2009.
12. K. Riesen and H. Bunke. Dissimilarity based vector space embedding of graphs using prototype reduction schemes. In *Proc. Int. Conf. on Machine Learning and Data Mining*, LNCS 5632, pages 617–631. Springer, 2009.
13. V. Frinken and H. Bunke. Self-training strategies for handwriting word recognition. In *Proc. Industrial Conf. Advances in Data Mining. Applications and Theoretical Aspects*, LNCS 5633, pages 291–300. Springer, 2009.
14. K. Riesen and H. Bunke. Cluster ensembles based on vector space embeddings of graphs. In J.A. Benediktsson, J. Kittler, and F. Roli, editors, *Multiple Classifier Systems*, LNCS 5519, pages 211–221. Springer, 2009.

15. K. Riesen, S. Fankhauser, H. Bunke, and P. Dickinson. Efficient suboptimal graph isomorphism. In A. Torsello, F. Escolano, and L. Brun, editors, *Graph-Based Representations in Pattern Recognition*, LNCS 5534, pages 124–133. Springer, 2009.
16. V. Frinken, K. Riesen, and H. Bunke. Improving graph classification by isomap. In A. Torsello, F. Escolano, and L. Brun, editors, *Graph-Based Representations in Pattern Recognition*, LNCS 5534, pages 205–214. Springer, 2009.
17. M. Ferrer, D. Karatzas, E. Valveny, and H. Bunke. A recursive embedding approach to median graph computation. In A. Torsello, F. Escolano, and L. Brun, editors, *Graph-Based Representations in Pattern Recognition*, LNCS 5534, pages 113–123. Springer, 2009.
18. H. Bunke and K. Riesen. Graph edit distance – optimal and suboptimal algorithms with application. In M. Dehmer and F. Emmert-Streib, editors, *Analysis of Complex Networks*, pages 113–143. Wiley-Blackwell, 2009.
19. A. Schlapbach, H. Bunke, and F. Wettstein. Estimating the readability of handwritten text – a support vector regression based approach. In *Proc. 19th Int. Conf. on Pattern Recognition*. IEEE, 2008.
20. M. Ferrer, E. Valveny, F. Serratos, K. Riesen, and H. Bunke. An approximate algorithm for median graph computation using graph embedding. In *Proc. 19th Int. Conf. on Pattern Recognition*. IEEE, 2008.
21. A. Fischer, K. Riesen, and H. Bunke. An experimental study of graph classification using prototype selection. In *Proc. 19th Int. Conf. on Pattern Recognition*. IEEE, 2008.
22. A. Schlapbach, F. Wettstein, and H. Bunke. Automatic estimation of the readability of handwritten text. In *Proc. 16th European Signal Processing Conference*, 2008.
23. R. Bertolami, Ch. Gutmann, L. Spitz, and H. Bunke. Shape code based lexicon reduction for offline handwriting recognition. In *Proc. 8th IAPR Int. Workshop on Document Analysis Systems*, pages 158–163, 2008.
24. A. Fornes, J. Lladós, G. Sanchez, and H. Bunke. Writer identification in old handwritten music scores. In *Proc. 8th IAPR Int. Workshop on Document Analysis Systems*, pages 347–353, 2008.
25. M. Liwicki, A. Schlapbach, and H. Bunke. Writer-dependent recognition of handwritten whiteboard notes in smart meeting room environments. In *Proc. 8th IAPR Int. Workshop on Document Analysis Systems*, pages 151–157, 2008.
26. K. Riesen and H. Bunke. On Lipschitz embeddings of graphs. In I. Lovrek, R.J. Howlett, and L.C. Jain, editors, *Proc. 12th Int. Conf. on Knowledge-Based Intelligent Information and Engineering Systems, Part I*, LNAI 5177, pages 131–140. Springer, 2008.
27. R. Bertolami and H. Bunke. Including language model information in the combination of handwritten text line recognizers. In *Proc. 11th Int. Conf. on Frontiers in Handwriting Recognition*, pages 25–30, 2008.
28. E. Indermühle, M. Liwicki, and H. Bunke. Recognition of handwritten historical documents: HMM-adaptation vs. writer specific training. In *Proc. 11th Int. Conf. on Frontiers in Handwriting Recognition*, pages 186–191, 2008.
29. M. Liwicki and H. Bunke. Combining on-line and off-line BLSTM networks for handwritten text line recognition. In *Proc. 11th Int. Conf. on Frontiers in Handwriting Recognition*, pages 31–36, 2008.

30. A. Brügger, H. Bunke, P. Dickinson, and K. Riesen. Generalized graph matching for data mining and information retrieval. In P. Perner, editor, *Advances in Data Mining. Medical Applications, E-Commerce, Marketing, and Theoretical Aspects*, LNCS 5077, pages 298–312. Springer, 2008.
31. K. Riesen and H. Bunke. Kernel k -means clustering applied to vector space embeddings of graphs. In L. Prevost, S. Marinai, and F. Schwenker, editors, *Proc. 3rd IAPR Workshop Artificial Neural Networks in Pattern Recognition*, LNAI 5064, pages 24–35. Springer, 2008.
32. H. Bunke and K. Riesen. Recent developments in graph classification and clustering using graph embedding kernels. In A. Juan-Ciscar and G. Sanchez-Albaladejo, editors, *Proc. 8th Int. Workshop Pattern Recognition in Information Systems*, pages 3–13, 2008.
33. K. Riesen and H. Bunke. Non-linear transformations of vector space embedded graphs. In A. Juan-Ciscar and G. Sanchez-Albaladejo, editors, *Proc. 8th Int. Workshop Pattern Recognition in Information Systems*, pages 173–183, 2008.
34. H. Bunke and K. Riesen. Graph classification based on dissimilarity space embedding. In N. da Vitoria Lobo et al., editor, *Structural, Syntactic, and Statistical Pattern Recognition*, LNCS 5342, pages 996–1008, 2008.
35. K. Riesen and H. Bunke. IAM graph database repository for graph based pattern recognition and machine learning. In N. da Vitoria Lobo et al., editor, *Structural, Syntactic, and Statistical Pattern Recognition*, LNCS 5342, pages 287–297, 2008.
36. R. Duin, E. Pekalska, A. Harol, W.-L. Lee, and H. Bunke. On Euclidean corrections for non-Euclidean dissimilarities. In N. da Vitoria Lobo et al., editor, *Structural, Syntactic, and Statistical Pattern Recognition*, LNCS 5342, pages 551–561, 2008.
37. M. Ferrer, E. Valveny, F. Serratosa, and H. Bunke. Exact median graph computation via graph embedding. In N. da Vitoria Lobo et al., editor, *Structural, Syntactic, and Statistical Pattern Recognition*, LNCS 5342, pages 15–24, 2008.
38. R. Bertolami and H. Bunke. Ensemble methods to improve the performance of an English handwritten text line recognizer. In D. Doerman and S. Jaeger, editors, *Arabic and Chinese Handwriting Recognition*, LNCS 4768, pages 265–277. Springer, 2008.
39. H. Bunke, P. Dickinson, M. Neuhaus, and M. Stettler. Matching of hypergraphs – algorithms, applications, and experiments. In H. Bunke, A. Kandel, and M. Last, editors, *Applied Pattern Recognition*, pages 131–154. Springer, 2008.
40. A. Schlapbach and H. Bunke. Off-line writer identification and verification using Gaussian mixture models. In S. Marinai and H. Fujisawa, editors, *Machine Learning in Document Analysis and Recognition*, pages 409–428. Springer, 2008.
41. T. Varga and H. Bunke. Perturbation models for generating synthetic training data in handwriting recognition. In S. Marinai and H. Fujisawa, editors, *Machine Learning in Document Analysis and Recognition*, pages 333–360. Springer, 2008.
42. A. Schenker, H. Bunke, M. Last, and A. Kandel. Clustering of web documents using graph matching. In A. Kandel, H. Bunke, and M. Last, editors, *Applied Graph Theory in Computer Vision and Pattern Recognition*, pages 247–265. Springer, 2007.
43. H. Bunke, P. Dickinson, A. Humm, Ch. Irniger, and M. Kraetzl. Graph sequence visualisation and its application to computer network monitoring and abnormal event detection. In A. Kandel, H. Bunke, and M. Last, editors, *Applied Graph Theory in Computer Vision and Pattern Recognition*, pages 227–245. Springer, 2007.

44. H. Bunke and M. Neuhaus. Graph matching – exact and error-tolerant methods and the automatic learning of edit costs. In D.J. Cook and L.B. Holder, editors, *Mining Graph Data*, pages 17–34. Wiley, 2007.
45. H. Bunke and T. Varga. Off-line Roman cursive handwriting recognition. In B. Chaudhuri, editor, *Digital Document Processing: Major Directions and Recent Advances*, volume 20 of *Advances in Pattern Recognition*, pages 165–173. Springer, 2007.
46. X. Jiang and H. Bunke. Graph matching. In P. Perner, editor, *Case-Based Reasoning on Images and Signals*, pages 149–173. Springer, 2007.
47. H. Bunke and K. Riesen. A family of novel kernel graphs for structural pattern recognition. In L. Rueda, D. Mery, and J. Kittler, editors, *Proc. 12th Iberoamerican Congress on Pattern Recognition*, number 4756 in *Lecture Notes in Computer Science*, pages 20–31. Springer, 2007.
48. M. Liwicki and H. Bunke. Feature selection for on-line handwriting recognition of whiteboard notes. In *Proc. 13th Conf. of the Graphonomics Society*, pages 101–105, 2007.
49. M. Liwicki, A. Schlapbach, P. Loretan, and H. Bunke. Automatic detection of gender and handedness from on-line handwriting. In *Proc. 13th Conf. of the Graphonomics Society*, pages 179–183, 2007.
50. K. Riesen and H. Bunke. Structural classifier ensembles for vector space embedded graphs. In *Proc. 20th Int. Joint Conf. on Neural Networks*, pages 1500–1505, 2007.
51. F. Lüthy, T. Varga, and H. Bunke. Using hidden Markov models as a tool for handwritten text line segmentation. In *Proc. 9th Int. Conf. on Document Analysis and Recognition*, pages 8–12, 2007.
52. R. Bertolami, S. Uchida, M. Zimmermann, and H. Bunke. Non-uniform slant correction for handwritten text line recognition. In *Proc. 9th Int. Conf. on Document Analysis and Recognition*, pages 18–22, 2007.
53. A. Schlapbach and H. Bunke. Fusing asynchronous feature streams for on-line writer identification. In *Proc. 9th Int. Conf. on Document Analysis and Recognition*, pages 103–107, 2007.
54. M. Liwicki, A. Graves, H. Bunke, and J. Schmidhuber. A novel approach to on-line handwriting recognition based on bidirectional long short-term memory networks. In *Proc. 9th Int. Conf. on Document Analysis and Recognition*, pages 367–371, 2007.
55. A. Graves, M. Liwicki, and H. Bunke. Unconstrained on-line handwriting recognition with recurrent neural networks. In *Advances in Neural Information Processing*, NIPS, Vancouver, 2007.
56. M. Liwicki and H. Bunke. Combining on-line and off-line systems for handwriting recognition. In *Proc. 9th Int. Conf. on Document Analysis and Recognition*, pages 372–376, 2007.
57. M. Liwicki, E. Indermühle, and H. Bunke. On-line handwritten text line detection using dynamic programming. In *Proc. 9th Int. Conf. on Document Analysis and Recognition*, pages 447–451, 2007.
58. K. Riesen, S. Fankhauser, and H. Bunke. Speeding up graph edit distance computation with a bipartite heuristic. In P. Frasconi, K. Kersting, and K. Tsuda, editors, *Proc. 5th Int. Workshop on Mining and Learning with Graphs*, pages 21–24, 2007.

59. K. Riesen, V. Kilchherr, and H. Bunke. Reducing the dimensionality of vector space embeddings of graphs. In P. Perner, editor, *Machine Learning and Data Mining in Pattern Recognition*, volume 4571 of *Lecture Notes on Artificial Intelligence*, pages 563–573. Springer, 2007.
60. O. Nierstrasz, M. Kobel, T. Girba, M. Lanza, and H. Bunke. Example-driven reconstruction of software models. In *Proc. 11th European Conf. on Software Maintenance and Reengineering*, pages 275–286, 2007.
61. R. Bertolami and H. Bunke. Multiple classifier methods for offline handwritten text line recognition. In M. Haindl, J. Kittler, and F. Roli, editors, *Multiple Classifier Systems*, volume 4472 of *Lecture Notes in Computer Science*, pages 72–81. Springer, 2007.
62. K. Riesen and H. Bunke. Classifier ensembles for vector spaces embedding of graphs. In M. Haindl, J. Kittler, and F. Roli, editors, *Multiple Classifier Systems*, volume 4472 of *Lecture Notes in Computer Science*, pages 220–230. Springer, 2007.
63. K. Riesen, M. Neuhaus, and H. Bunke. Bipartite graph matching for computing the edit distance of graphs. In F. Escolano and M. Vento, editors, *Graph-Based Representations in Pattern Recognition*, volume 4538 of *Lecture Notes in Computer Science*, pages 1–12. Springer, 2007.
64. M. Neuhaus and H. Bunke. A quadratic programming approach to the graph edit distance problem. In F. Escolano and M. Vento, editors, *Graph-Based Representations in Pattern Recognition*, volume 4538 of *Lecture Notes in Computer Science*, pages 92–102. Springer, 2007.
65. K. Riesen, M. Neuhaus, and H. Bunke. Graph embedding in vector spaces by means of prototype selection. In F. Escolano and M. Vento, editors, *Graph-Based Representations in Pattern Recognition*, volume 4538 of *Lecture Notes in Computer Science*, pages 383–393. Springer, 2007.
66. R. Bertolami, B. Halter, and H. Bunke. Combination of multiple handwritten text line recognition systems with a recursive approach. In *Proc. 10th Int. Workshop Frontiers in Handwriting Recognition*, pages 61–65, 2006.
67. A. Schlapbach and H. Bunke. Off-line writer verification: a comparison of a hidden Markov model (HMM) and a Gaussian mixture model (GMM) based system. In *Proc. 10th Int. Workshop Frontiers in Handwriting Recognition*, pages 275–280, 2006.
68. M. Liwicki and H. Bunke. HMM-based on-line recognition of handwritten whiteboard notes. In *Proc. 10th Int. Workshop Frontiers in Handwriting Recognition*, pages 595–599, 2006.
69. A. Schenker, H. Bunke, M. Last, and A. Kandel. Polynomial time complexity graph distance computation for web content mining. In M. Basu and T. K. Ho, editors, *Data Complexity in Pattern Recognition*, pages 197–215. Springer, 2006.
70. B. Spillmann, M. Neuhaus, and H. Bunke. Multiple classifier systems for embedded string patterns. In *Proc. 2nd Int. Workshop on Artificial Neural Networks in Pattern Recognition*, pages 177–187, 2006.
71. M. Neuhaus and H. Bunke. A convolution kernel for error-tolerant graph matching. In *Proc. 18th Int. Conf. on Pattern Recognition*, volume 4, pages 220–223, 2006.
72. A. Schlapbach and H. Bunke. Off-line writer identification using Gaussian mixture models. In *Proc. 18th Int. Conf. on Pattern Recognition*, volume 3, pages 992–995, 2006.
73. M. Liwicki, M. Scherz, and H. Bunke. Word segmentation of on-line handwritten text lines. In *Proc. 18th Int. Conf. on Pattern Recognition*, volume 2, pages 929–933, 2006.

74. R. Bertolami and H. Bunke. Early feature stream integration versus decision level combination in a multiple classifier system for text line recognition. In *Proc. 18th Int. Conf. on Pattern Recognition*, volume 2, pages 845–848, 2006.
75. E. Pekalska, Harol A., R.P.W. Duin, B. Spillmann, and H. Bunke. Non-Euclidean or non-metric measures can be informative. In *Proc. Joint IAPR Workshops on Structural and Syntactic Pattern Recognition and Statistical Techniques in Pattern Recognition*, pages 871–880, 2006.
76. M. Neuhaus and H. Bunke. A random walk kernel derived from graph edit distance. In *Proc. Joint IAPR Workshops on Structural and Syntactic Pattern Recognition and Statistical Techniques in Pattern Recognition*, pages 191–199, 2006.
77. M. Neuhaus, K. Riesen, and H. Bunke. Fast suboptimal algorithms for the computation of graph edit distance. In *Proc. Joint IAPR Workshops on Structural and Syntactic Pattern Recognition and Statistical Techniques in Pattern Recognition*, pages 163–172, 2006.
78. B. Spillmann, M. Neuhaus, H. Bunke, E. Pekalska, and B. Duin. Transforming strings to vector spaces using prototype selection. In *Proc. Joint IAPR Workshops on Structural and Syntactic Pattern Recognition and Statistical Techniques in Pattern Recognition*, pages 287–296, 2006.
79. B. Le Saux and H. Bunke. Combining SVM and graph matching in a Bayesian multiple classifier system for image content recognition. In *Proc. Joint IAPR Workshops on Structural and Syntactic Pattern Recognition and Statistical Techniques in Pattern Recognition*, pages 696–704, 2006.
80. R. Bertolami and H. Bunke. Diversity analysis for ensembles of word sequence recognisers. In *Proc. Joint IAPR Workshops on Structural and Syntactic Pattern Recognition and Statistical Techniques in Pattern Recognition*, pages 677–686, 2006.
81. H. Bunke, P. Dickinson, A. Humm, Ch. Irniger, and M. Kraetzel. Computer network monitoring and abnormal event detection using graph matching and multidimensional scaling. In P. Perner, editor, *Advances in Data Mining, Proc. 6th Industrial Conf. on Data Mining, ICDM*, volume 4065 of *Lecture Notes on Artificial Intelligence*, pages 576–590. Springer, 2006.
82. M. Liwicki, A. Schlapbach, H. Bunke, S. Bengio, J. Mariéthoz, and J. Richiardi. Writer identification for smart meeting room systems. In H. Bunke and L.A. Spitz, editors, *Proc. 7th Int. Workshop on Document Analysis Systems*, volume 3872 of *Lecture Notes in Computer Science*, pages 186–195. Springer, 2006.
83. R. Bertolami and H. Bunke. Ensemble methods for handwritten text line recognition systems. In *Proc. IEEE Int. Conf. on Systems, Man and Cybernetics*, pages 2334–2339, 2005.
84. X. Jiang, C. Marti, Ch. Irniger, and H. Bunke. Image segmentation evaluation by techniques of comparing clusterings. In F. Roli and S. Vitulano, editors, *Proc. 13th Int. Conf. on Image Analysis and Processing*, volume 3617 of *Lecture Notes in Computer Science*, pages 344–351. Springer, 2005.
85. M. Neuhaus and H. Bunke. Graph-based multiple classifier systems – A data level fusion approach. In F. Roli and S. Vitulano, editors, *Proc. 13th Int. Conf. on Image Analysis and Processing*, volume 3617 of *Lecture Notes in Computer Science*, pages 479–486. Springer, 2005.
86. H. Bunke, P. Dickinson, and M. Kraetzel. Theoretical and algorithmic framework for hypergraph matching. In F. Roli and S. Vitulano, editors, *Proc. 13th Int. Conf. on Image Analysis and Processing*, volume 3617 of *Lecture Notes in Computer Science*, pages 463–470. Springer, 2005.

87. H. Bunke, Ch. Irniger, and M. Neuhaus. Graph matching – challenges and potential solutions. In F. Roli and S. Vitulano, editors, *Proc. 13th Int. Conf. on Image Analysis and Processing*, volume 3617 of *Lecture Notes in Computer Science*, pages 1–10. Springer, 2005.
88. A. Schlapbach and H. Bunke. Writer identification using an HMM-based handwriting recognition system: to normalize the input or not? In *Proc. 12th Conf. of the Int. Graphonomics Society*, pages 138–142, 2005.
89. M. Liwicki and H. Bunke. Handwriting recognition of whiteboard notes. In *Proc. 12th Conf. of the Int. Graphonomics Society*, pages 118–122, 2005.
90. T. Varga, D. Kilchhofer, and H. Bunke. Template-based synthetic handwriting generation for the training of recognition systems. In *Proc. 12th Conf. of the Int. Graphonomics Society*, pages 206–211, 2005.
91. H. Bunke, P. Dickinson, Ch. Irniger, and M. Kraetzel. Analysis of time series of graphs: prediction of node presence by means of decision tree learning. In *Proc. Int. Conf. on Machine Learning and Data Mining*, pages 366–375, 2005.
92. M. Neuhaus and H. Bunke. A graph matching based approach to fingerprint classification using directional variance. In *Proc. 5th Int. Conf. on Audio- and Video-Based Biometric Person Authentication*, pages 191–200, 2005.
93. A. Schlapbach, V. Kilchherr, and H. Bunke. Improving writer identification by means of feature selection and extraction. In *Proc. 8th Int. Conf. on Document Analysis and Recognition*, pages 131–135, 2005.
94. M. Liwicki and H. Bunke. Enhancing training data for handwriting recognition of whiteboard notes with samples from a different database. In *Proc. 8th Int. Conf. on Document Analysis and Recognition*, pages 550–554, 2005.
95. M. Liwicki and H. Bunke. IAM-OnDB – an on-line English sentence database acquired from handwritten text on a whiteboard. In *Proc. 8th Int. Conf. on Document Analysis and Recognition*, pages 956–961, 2005.
96. T. Varga and H. Bunke. Tree structure for word extraction from handwritten text lines. In *Proc. 8th Int. Conf. on Document Analysis and Recognition*, pages 352–356, 2005.
97. R. Bertolami and H. Bunke. Multiple handwritten text recognition systems derived from specific integration of a language model. In *Proc. 8th Int. Conf. on Document Analysis and Recognition*, pages 521–526, 2005.
98. B. Le Saux and H. Bunke. Feature selection for graph-based image classifiers. In J. Marques, N. Perez de Blanca, and P. Pina, editors, *Pattern Recognition and Image Analysis, Proc. 2nd Iberian Conf. IbPRIA, Part II*, volume 3523 of *Lecture Notes in Computer Science*, pages 147–154. Springer, 2005.
99. H. Bunke, P. Dickinson, and M. Kraetzel. Comparison of two different prediction schemes for the analysis of time series of graphs. In J. Marques, N. Perez de Blanca, and P. Pina, editors, *Pattern Recognition and Image Analysis, Proc. 2nd Iberian Conf. IbPRIA, Part II*, volume 3523 of *Lecture Notes in Computer Science*, pages 99–106. Springer, 2005.
100. M. Neuhaus and H. Bunke. Edit distance based kernel functions for attributed graph matching. In L. Brun and M. Vento, editors, *Graph-Based Representations in Pattern Recognition*, volume 3434 of *Lecture Notes in Computer Science*, pages 352–361. Springer, 2005.

101. Ch. Irrniger and H. Bunke. Decision trees for error-tolerant graph database filtering. In L. Brun and M. Vento, editors, *Graph-Based Representations in Pattern Recognition*, volume 3434 of *Lecture Notes in Computer Science*, pages 301–311. Springer, 2005.
102. H. Bunke, P. Dickinson, and M. Kraetzl. Recovery of missing information in graph sequences. In L. Brun and M. Vento, editors, *Graph-Based Representations in Pattern Recognition*, volume 3434 of *Lecture Notes in Computer Science*, pages 312–321. Springer, 2005.
103. A. Serrau, G. L. Marcialis, H. Bunke, and F. Roli. An experimental comparison of fingerprint classification methods using graphs. In L. Brun and M. Vento, editors, *Graph-Based Representations in Pattern Recognition*, volume 3434 of *Lecture Notes in Computer Science*, pages 281–290. Springer, 2005.
104. A. Schenker, H. Bunke, M. Last, and A. Kandel. Classification and clusterings of documents using graph models. In Ch. Chen and P. Wang, editors, *Handbook of Pattern Recognition and Computer Vision*, pages 287–301. World Scientific, 2005.
105. S. Günter and H. Bunke. Ensembles of classifiers for handwritten word recognition specialized on individual handwriting styles. In S. Marinai and A. Dengel, editors, *Document Analysis Systems IV, Proc. 6th Int. Workshop*, volume 3163 of *Lecture Notes in Computer Science*, pages 286–297. Springer, 2004.
106. A. Schenker, H. Bunke, M. Last, and A. Kandel. A graph-based framework for web document mining. In S. Marinai and A. Dengel, editors, *Document Analysis Systems IV, Proc. 6th Int. Workshop*, volume 3163 of *Lecture Notes in Computer Science*, pages 401–412. Springer, 2004.
107. S. Günter and H. Bunke. Combination of three classifiers with different architectures for handwritten word recognition. In *Proc. 9th Int. Workshop on Frontiers in Handwriting Recognition*, pages 63–68, 2004.
108. A. Schlapbach and H. Bunke. Using HMM-based recognizers for writer identification and verification. In *Proc. 9th Int. Workshop on Frontiers in Handwriting Recognition*, pages 167–172, 2004.
109. M. Zimmermann and H. Bunke. N-gram language models for offline handwritten text recognition. In *Proc. 9th Int. Workshop on Frontiers in Handwriting Recognition*, pages 203–208, 2004.
110. T. Varga and H. Bunke. Comparing natural and synthetic training data for off-line cursive handwritten text recognition. In *Proc. 9th Int. Workshop on Frontiers in Handwriting Recognition*, pages 221–225, 2004.
111. H. Bunke, P. Dickinson, and M. Kraetzl. Matching sequences of graphs with applications in computer network analysis. In *Proc. 8th World Multi-Conf. on Systemics, Cybernetics and Informatics*, pages 270–275, 2004.
112. M. Zimmermann and H. Bunke. Optimizing the integration of a statistical language model in HMM based offline handwritten text recognition. In *Proc. 17th Int. Conf. on Pattern Recognition*, volume 2, pages 541–544, 2004.
113. A. Schlapbach and H. Bunke. Off-line handwriting identification using HMM-based recognizers. In *Proc. 17th Int. Conf. on Pattern Recognition*, volume 2, pages 654–658, 2004.
114. T. Varga and H. Bunke. Off-line handwritten textline recognition using a mixture of natural and synthetic training data. In *Proc. 17th Int. Conf. on Pattern Recognition*, volume 2, pages 545–549, 2004.

115. M. Neuhaus and H. Bunke. A probabilistic approach to learning costs for graph edit distance. In *ICPR Proc. 17th Int. Conf. on Pattern Recognition*, volume 3, pages 389–393, 2004.
116. Ch. Irniger and H. Bunke. Graph database filtering using decision trees. In *Proc. 17th Int. Conf. on Pattern Recognition*, volume 3, pages 383–388, 2004.
117. S. Günter and H. Bunke. An evaluation of ensemble methods in handwritten word recognition based on feature selection. In *Proc. 17th Int. Conf. on Pattern Recognition*, volume 1, pages 388–392. IEEE, 2004.
118. M. Zimmermann, R. Bertolami, and H. Bunke. Rejection strategies for offline handwritten sentence recognition. In *Proc. 17th Int. Conf. on Pattern Recognition*, volume 2, pages 550–553, 2004.
119. H. Bunke and M. Kraetzl. Classification and detection of abnormal events in time series of graphs. In Last M., A. Kandel, and H. Bunke, editors, *Data Mining in Time Series Databases*, pages 127–148. World Scientific, 2004.
120. A. Schenker, M. Last, H. Bunke, and A. Kandel. Comparison of algorithms for web document clustering using graph representations of data. In A. Fred, T. Caelli, R. P. W. Duin, A. Campilho, and D. d. Ridder, editors, *Structural, Syntactic, and Statistical Pattern Recognition, Proc. Joint IAPR Int. Workshops SSPR and SPR*, volume 3138 of *Lecture Notes in Computer Science*, pages 190–197. Springer, 2004.
121. S. Günter and H. Bunke. Evaluation of classical and novel ensemble methods for handwritten word recognition. In A. Fred, T. Caelli, R. P. W. Duin, A. Campilho, and D. d. Ridder, editors, *Structural, Syntactic, and Statistical Pattern Recognition, Proc. Joint IAPR Int. Workshops SSPR and SPR*, volume 3138 of *Lecture Notes in Computer Science*, pages 583–573. Springer, 2004.
122. Ch. Irniger and H. Bunke. Decision tree structures for graph database filtering. In A. Fred, T. Caelli, R. P. W. Duin, A. Campilho, and D. d. Ridder, editors, *Structural, Syntactic, and Statistical Pattern Recognition, Proc. Joint IAPR Int. Workshops SSPR and SPR*, volume 3138 of *Lecture Notes in Computer Science*, pages 66–75. Springer, 2004.
123. E. Pekalska, R. Duin, S. Günter, and H. Bunke. On not making dissimilarities Euclidean. In A. Fred, T. Caelli, R. P. W. Duin, A. Campilho, and D. d. Ridder, editors, *Structural, Syntactic, and Statistical Pattern Recognition, Proc. Joint IAPR Int. Workshops SSPR and SPR*, volume 3138 of *Lecture Notes in Computer Science*, pages 1145–1154. Springer, 2004.
124. M. Neuhaus and H. Bunke. An error-tolerant approximate matching algorithm for attributed planar graphs and its application to fingerprint classification,. In A. Fred, T. Caelli, R. P. W. Duin, A. Campilho, and D. d. Ridder, editors, *Structural, Syntactic, and Statistical Pattern Recognition, Proc. Joint IAPR Int. Workshops SSPR and SPR*, volume 3138 of *Lecture Notes in Computer Science*, pages 180–189. Springer, 2004.
125. X. Jiang, H. Bunke, and J. Csirik. Median strings: A review. In M. Last, A. Kandel, and H. Bunke, editors, *Data Mining in Time Series Databases*, pages 173–192. World Scientific, 2004.
126. S. Günter and H. Bunke. Ensembles of classifiers derived from multiple prototypes and their application to handwriting recognition. In F. Roli, J. Kittler, and T. Windeatt, editors, *Multiple Classifier Systems, Proc. 5th Int. Workshop, MCS 2004*, volume 3077 of *Lecture Notes in Computer Science*, pages 314–323. Springer, 2004.
127. A. Schenker, H. Bunke, M. Last, and A. Kandel. Building graph-based classifier ensembles by random node selection. In F. Roli, J. Kittler, and T. Windeatt, editors, *Multiple Classifier Systems, Proc. 5th Int. Workshop, MCS 2004*, volume 3077 of *Lecture Notes in Computer Science*, pages 214–222. Springer, 2004.

128. A. Schenker, M. Last, H. Bunke, and A. Kandel. Clustering of web documents using a graph model. In A. Antonacopoulos and J. Hu, editors, *Web Document Analysis: Challenges and Opportunities*, pages 3–18. World Scientific, 2003.
129. S. Günter and H. Bunke. Off-line cursive handwriting recognition—on the influence of training set and vocabulary size in multiple classifier systems. In *Proc. 11th Conf. of the Int. Graphonomics Society*, pages 196–199, 2003.
130. S. Günter and H. Bunke. Fast feature selection in an HMM-based multiple classifier system for handwriting recognition. In B. Michaelis and G. Krell, editors, *DAGM-Symposium*, number 2781 in *Lecture Notes in Computer Science*, pages 289–296. Springer, 2003.
131. T. Varga and H. Bunke. Effects of training set expansion in handwriting recognition using synthetic data. In *Proc. 11th Conf. of the Int. Graphonomics Society*, pages 200–203, 2003.
132. S. Günter and H. Bunke. New boosting algorithms for classification problems with large number of classes applied to a handwritten word recognition task. In T. Windeatt and F. Roli, editors, *Proc. 4th Int. Workshop Multiple Classifier Systems*, volume 2709 of *Lecture Notes in Computer Science*, pages 329–335. Springer, 2003.
133. A. Schenker, M. Last, H. Bunke, and A. Kandel. Graphs representations for web document clustering. In F. J. Perales, A. J. C. Campilho, N. P. de la Blanca, and A. Sanfeliu, editors, *Proc. 1st Iberian Conf. Pattern Recognition and Image Analysis*, volume 2652 of *Lecture Notes in Computer Science*, pages 935–942. Springer, 2003.
134. M. Helmers and H. Bunke. Generation and use of synthetic training data in cursive handwriting recognition. In F. J. Perales, A. J. C. Campilho, N. P. de la Blanca, and A. Sanfeliu, editors, *Proc. 1st Iberian Conf. Pattern Recognition and Image Analysis*, volume 2652 of *Lecture Notes in Computer Science*, pages 336–345. Springer, 2003.
135. C. Hertel and H. Bunke. A set of novel features for writer identification. In J. Kittler and M.S. Nixon, editors, *Proc. 4th Int. Conf. Audio-and Video-Based Biometric Person Authentication*, pages 679–687. Springer, 2003.
136. A. Schenker, M. Last, H. Bunke, and A. Kandel. Comparison of distance measures for graph-based clustering of documents. In E. Hancock and M. Vento, editors, *Proc. 4th Int. Workshop Graph Based Representations in Pattern Recognition*, volume 2726 of *Lecture Notes in Computer Science*, pages 202–213. Springer, 2003.
137. P. Dickinson, H. Bunke, A. Dadej, and M. Kraetzl. On graphs with unique node labels. In E. Hancock and M. Vento, editors, *Proc. 4th Int. Workshop Graph Based Representations in Pattern Recognition*, volume 2726 of *Lecture Notes in Computer Science 2726*, pages 13–23. Springer, 2003.
138. R. Ambauen, S. Fischer, and H. Bunke. Graph edit distance with node splitting and merging, and its application to diatom identification. In E. Hancock and M. Vento, editors, *Proc. 4th Int. Workshop Graph Based Representations in Pattern Recognition*, volume 2726 of *Lecture Notes in Computer Science*, pages 95–106. Springer, 2003.
139. Ch. Irniger and H. Bunke. Theoretical analysis and experimental comparison of graph matching algorithms for database filtering. In E. Hancock and M. Vento, editors, *Proc. 4th Int. Workshop Graph Based Representations in Pattern Recognition*, volume 2726 of *Lecture Notes in Computer Science*, pages 118–129. Springer, 2003.
140. M. Neuhaus and H. Bunke. Self-organizing graph edit distance. In E. Hancock and M. Vento, editors, *Proc. 4th Int. Workshop Graph Based Representations in Pattern Recognition*, volume 2726 of *Lecture Notes in Computer Science*, pages 83–94. Springer, 2003.

141. H. Bunke, P. Foggia, C. Guidobaldi, and M. Vento. Graph clustering using the weighted minimum common supergraph. In E. Hancock and M. Vento, editors, *Proc. 4th Int. Workshop Graph Based Representations in Pattern Recognition*, volume 2726 of *Lecture Notes in Computer Science*, pages 235–246. Springer, 2003.
142. H. Bunke. Graph-based tools for data mining and machine learning. In P. Perner and A. Rosenfeld, editors, *Proc. 3rd Int. Conf. Machine Learning and Data Mining in Pattern Recognition*, volume 2734 of *Lecture Notes on Artificial Intelligence*, pages 7–19. Springer, 2003.
143. P. Dickinson, H. Bunke, A. Dadej, and M. Kraetzl. Novel graph distance measure based on intra-graph clustering and cluster distance. In *Proc. 7th World Multiconference on Systemics, Cybernetics and Informatics*, volume 3, pages 333–338, 2003.
144. S. Günter and H. Bunke. Optimizing the number of states, training iterations and Gaussians in an HMM-based handwritten word recognizer. In *Proc. 7th Int. Conf. on Document Analysis and Recognition, Edinburgh*, pages 472–476. IEEE, 2003.
145. A. Vinciarelli, S. Bengio, and H. Bunke. Offline recognition of large vocabulary cursive handwritten text. In *Proc. 7th Int. Conf. on Document Analysis and Recognition, Edinburgh*, pages 1101–1105, 2003.
146. A. Schenker, M. Last, H. Bunke, and A. Kandel. Classification of web documents using a graph model. In *Proc. 7th Int. Conf. on Document Analysis and Recognition, Edinburgh*, pages 240–244, 2003.
147. T. Varga and H. Bunke. Generation of synthetic training data for an HMM-based handwriting recognition system. In *Proc. 7th Int. Conf. on Document Analysis and Recognition, Edinburgh*, pages 618–622. IEEE, 2003.
148. M. Zimmermann, J.-C. Chappelier, and H. Bunke. Parsing N-best lists of handwritten sentences. In *Proc. 7th Int. Conf. on Document Analysis and Recognition, Edinburgh*, pages 572–576, 2003.
149. H. Bunke. Recognition of cursive Roman handwriting—past, present and future. In *Proc. 7th Int. Conf. on Document Analysis and Recognition, Edinburgh*, pages 448–459. IEEE, 2003.
150. A. Schenker, M. Last, H. Bunke, and A. Kandel. A comparison of two novel clustering algorithms for web documents. In *Proc. 2nd IAPR Workshop on Web Document Analysis, Edinburgh*, pages 71–74, 2003.
151. X. Jiang and H. Bunke. Weighted mean and generalized median of strings. In D. Chen and X. Cheng, editors, *Pattern Recognition and String Matching*. Kluwer, 2002.
152. C. Guidobaldi, H. Bunke, and M. Vento. Weighted minimum common supergraph for cluster representation. In *Proc. IEEE Int. Conf. on Image Processing*, volume 2, pages 25–28, 2002.
153. M. Last, H. Bunke, and A. Kandel. Fuzzy modeling of the complexity vs. accuracy trade-off in a sequential two-stage multi-classifier system. In A. Grmela and N. E. Mastorakis, editors, *Advances in Intelligent Systems, Fuzzy Systems, Evolutionary Computation*, pages 12–17. WSEAS Press, 2002.
154. H. Bunke, M. Kraetzl, P. Shoubridge, and W. Wallis. Measuring change in large enterprise data networks. In *Proc. Int. Conf. on Information, Decision and Control*, pages 53–58, 2002.

155. P. Dickinson, H. Bunke, A. Dadej, and M. Kraetzl. Median graphs and anomalous change detection in communication networks. In *Proc. Int. Conf. on Information, Decision and Control*, pages 59–64, 2002.
156. X. Jiang, S. Hofer, T. Stahs, I. Ahrns, and H. Bunke. A new technique for the extraction and tracking of surfaces in range image sequences. In G.D. Hager, H.I. Christensen, H. Bunke, and R. Klein, editors, *Sensor Based Intelligent Robots*, volume 2238 of *Lecture Notes in Computer Science*, pages 87–100. Springer, 2002.
157. S. Günter and H. Bunke. Adaptive self-organizing map in the graph domain. In H. Bunke and A. Kandel, editors, *Hybrid Methods in Pattern Recognition*, pages 61–74. World Scientific, 2002.
158. S. Günter and H. Bunke. Generating classifier ensembles from multiple prototypes and its application to handwriting recognition. In *Multiple Classifier Systems*, volume 2364 of *Lecture Notes in Computer Science*, pages 179–188. Springer, 2002.
159. P.J. Dickinson, H. Bunke, A. Dadej, and M. Kraetzl. Similarity measure for hierarchical graph representation and its application to computer network monitoring. In *Proc. 6th World Multiconference on Systemics, Cybernetics and Informatics, Orlando, Florida*, volume 4, pages 457–462, 2002.
160. S. Fischer, H.R. Shahbazkia, and H. Bunke. Contour extraction. In H. du Buf and M. Bayer, editors, *Automatic Diatom Identification*. World Scientific, 2002.
161. S. Fischer and H. Bunke. Identification using classical and new features in combination with decision tree ensembles. In H. du Buf and M. Bayer, editors, *Automatic Diatom Identification*. World Scientific, 2002.
162. S. Fischer, K. Gilomen, and H. Bunke. Identification of diatoms by grid graph matching. In T. Caelli, A. Amin, R. Duin, M. Kamel, and D. de Ridder, editors, *Structural, Syntactic, and Statistical Pattern Recognition in Proc. Joint IAPR Int. Workshops SSPR 2002 and SPR 2002*, volume 2396 of *Lecture Notes in Computer Science*, pages 94–103. Springer, 2002.
163. H. Bunke, P. Foggia, C. Guidobaldi, C. Sansone, and M. Vento. A comparison of algorithms for maximum common subgraph on randomly connected graphs. In T. Caelli, A. Amin, R. Duin, M. Kamel, and D. de Ridder, editors, *Structural, Syntactic, and Statistical Pattern Recognition in Proc. Joint IAPR Int. Workshops SSPR 2002 and SPR 2002*, volume 2396 of *Lecture Notes in Computer Science*, pages 123–132. Springer, 2002.
164. X. Jiang and H. Bunke. Optimal lower bound for generalized median problems in metric space. In T. Caelli, A. Amin, R. Duin, M. Kamel, and D. de Ridder, editors, *Structural, Syntactic, and Statistical Pattern Recognition in Proc. Joint IAPR Int. Workshops SSPR 2002 and SPR 2002*, volume 2396 of *Lecture Notes in Computer Science*, pages 143–151. Springer, 2002.
165. S. Günter and H. Bunke. Creation of classifier ensembles for handwritten word recognition using feature selection algorithms. In *Proc. 8th Int. Workshop on Frontiers in Handwriting Recognition*, pages 183–188, 2002.
166. M. Zimmermann and H. Bunke. Hidden Markov model length optimization for handwriting recognition systems. In *Proc. 8th Int. Workshop on Frontiers in Handwriting Recognition*, pages 369–374, 2002.
167. M. Zimmermann and H. Bunke. Automatic segmentation of the IAM off-line database for handwritten English text. In *Proc. 16th Int. Conf. on Pattern Recognition*, volume 4, pages 35–39, 2002.

168. X. Jiang, H. Bunke, K. Abegglen, and A. Kandel. Curve morphing by weighted mean of strings. In *Proc. 16th Int. Conf. on Pattern Recognition*, volume 4, pages 192–195. IEEE, 2002.
169. S. Günter and H. Bunke. A new combination scheme for HMM-based classifiers and its application to handwriting recognition. In *Proc. 16th Int. Conf. on Pattern Recognition*, volume 2, pages 332–337. IEEE, 2002.
170. H. Bunke, S. Günter, and X. Jiang. Towards bridging the gap between statistical and structural pattern recognition: two new concepts in graph matching. In S. Singh, N. Murshed, and W. Kropatsch, editors, *Int. Conf. on Advances in Pattern Recognition*, volume 2013 of *Lecture Notes in Computer Science*, pages 1–11. Springer, 2001.
171. H. Bunke. Recent advances in structural pattern recognition with applications to visual form analysis. In C. Arcelli, L. Cordella, and G. Sanniti di Baja, editors, *Visual Form 2001*, volume 2059 of *Lecture Notes in Computer Science*, pages 11–23. Springer, 2001.
172. H. Bunke, M. Gori, M. Hagenbuchner, Ch. Irniger, and A. C. Tsoi. Generation of image databases using attributed plex grammars. In J.-M. Jolion, W. Kropatsch, and M. Vento, editors, *Proc. 3rd IAPR-TC15 Workshop on Graph-based Representations in Pattern Recognition*, pages 200–209, 2001.
173. S. Günter and H. Bunke. Validation indices for graph clustering. In J.-M. Jolion, W. Kropatsch, and M. Vento, editors, *Proc. 3rd IAPR-TC15 Workshop on Graph-based Representations in Pattern Recognition*, pages 229–238, 2001.
174. Ch. Irniger and H. Bunke. Graph matching: Filtering large databases of graphs using decision trees. In J.-M. Jolion, W. Kropatsch, and M. Vento, editors, *Proc. 3rd IAPR-TC15 Workshop on Graph-based Representations in Pattern Recognition*, pages 239–249, 2001.
175. U.-V. Marti and H. Bunke. Use of positional information in sequence alignment for multiple classifier combination. In J. Kittler and F. Roli, editors, *Multiple Classifier Systems*, volume 2096 of *Lecture Notes in Computer Science*, pages 388–398. Springer, 2001.
176. P. Dickinson, H. Bunke, A. Dadej, and M. Kraetzl. Application of median graphs in detection of abnormalous change in communication networks. In *Proc. World Multiconference on Systemics, Cybernetics and Informatics*, volume 5, pages 194–197, 2001.
177. S. Campbell, M. Kumar, and H. Bunke. Parallel subgraph matching on a hierarchical interconnection network. In H.-N. Teodorescu, L.C. Jain, and A. Kandel, editors, *Hardware Implementation of Intelligent Systems*, pages 245–275. Physica Verlag, 2001.
178. S. Fischer and H. Bunke. Automatic identification of diatoms using decision forests. In P. Perner, editor, *Machine Learning and Data Mining in Pattern Recognition*, pages 173–183. Springer, 2001.
179. U.-V. Marti, R. Messerli, and H. Bunke. Writer identification using text line based features. In *Proc. 6th Int. Conf. on Document Analysis and Recognition*, pages 101–105. IEEE, 2001.
180. U.-V. Marti and H. Bunke. Text line segmentation and word recognition in a system for general writer independent handwriting recognition. In *Proc. 6th Int. Conf. on Document Analysis and Recognition*, pages 159–163. IEEE, 2001.
181. U.-V. Marti and H. Bunke. On the influence of vocabulary size and language models in unconstrained handwritten text recognition. In *Proc. 6th Int. Conf. on Document Analysis and Recognition*, pages 260–265. IEEE, 2001.

182. T. Perroud, K. Sobottka, H. Bunke, and L. Hall. Text extraction from color documents - clustering approaches in three and four dimensions. In *Proc. 6th Int. Conf. on Document Analysis and Recognition*, pages 937–941, 2001.
183. K. Sobottka, C. Cris, P. Zuber, and H. Bunke. Obstacle tracking in registered range and reflectance image sequences using multivalued template matching. In J. Blanc-Talon and D. C. Popescu, editors, *Imaging and Vision Systems: Theory, Assessment and Applications*, pages 281–301. Nova Science Publ., 2001.
184. S. Dick, A. Schenker, M. Last, H. Bunke, and A. Kandel. Re-granulating a fuzzy rulebase. In *Proc. 10th IEEE Int. Conf. on Fuzzy Systems, Melbourne*, 2001.
185. M. Bayer, M. Pullan, D. Mann, S. Juggins, A. Ciobanu, L. Santos, H. Shahbazkia, H. du Buf, S. Fischer, H. Bunke, M. Wilkinson, J. Roerdink, J. Pech-Pacheco, G. Cristobal, V. Cirimele, and B. Ludes. ADIAC: Using computer vision technology for automatic diatom identification. In A. Economou-Amilli, editor, *Proc. 16th Int. Diatom Symposium*, pages 537–562. University of Athens, Greece, 2001.
186. W. Rodrigues, M. Last, A. Kandel, and H. Bunke. 3-dimensional curve similarity using string matching. In *Proc. 3rd Int. Symposium on Intelligent Manufacturing Systems, Sakarya, Turkey*, 2001.
187. X. Jiang, C. Irniger, and H. Bunke. Training/test data partitioning for empirical performance evaluation. In H. Christensen and J. Phillips, editors, *Empirical Evaluation Methods in Computer Vision*, pages 23–37. World Scientific, 2000.
188. H. Bunke and X. Jiang. Graph matching and similarity. In H.-N. Teodorescu, D. Mlynek, A. Kandel, and H.-J. Zimmermann, editors, *Intelligent Systems and Interfaces*. Kluwer Academic Publishers, 2000.
189. X. Jiang, L. Schiffmann, and H. Bunke. Computation of median shapes. In *Proc. 4th Asian Conf. on Computer Vision*, pages 300–305. IEEE, 2000.
190. K. Shearer, Venkatesh. S., and H. Bunke. Graph sequence matching by decision tree navigation. In *Proc. 2nd IAPR-TC-15 Workshop on Graph-based Representations*, pages 99–108, 2000.
191. X. Jiang, A. Munger, and H. Bunke. Computing the generalized mean of a set of graphs. In *Proc. 2nd IAPR-TC-15 Workshop on Graph-based Representations*, pages 115–124, 2000.
192. H. Bunke and M. Vento. Benchmarking of graph matching algorithms. In *Proc. 2nd IAPR-TC-15 Workshop on Graph-based Representations*, pages 109–114, 2000.
193. H. Bunke. Graph matching: Theoretical foundations, algorithms, and applications. In *Proc. Vision Interface 2000*, pages 82–88, 2000.
194. X. Jiang, K. Yu, and H. Bunke. Classifier combination for grammar-guided sentence recognition. In J. Kittler and F. Roli, editors, *Multiplier Classifier Systems*, volume 1857 of *Lecture Notes in Computer Science*, pages 383–392. Springer, 2000.
195. X. Jiang, C. Irniger, and H. Bunke. Design of training/test data sets for empirical performance evaluation. In P.J. Phillips and H. Christensen, editors, *Proc. 2nd Workshop on Empirical Evaluation Methods in Computer Vision*, pages 25–36, 2000.
196. M. Lazarescu, H. Bunke, and S Venkatesh. Graph matching: fast candidate elimination using machine learning techniques. In F.J. Ferri, J.M. Inesta, A. Amin, and P. Pudil, editors, *Advances in Pattern Recognition*, volume 1876 of *Lecture Notes in Computer Science*, pages 236–245. Springer, 2000.

197. H. Bunke. Recent developments in graph matching. In *Proc. 15th Int. Conf. on Pattern Recognition*, volume 2, pages 117–124. IEEE, 2000.
198. K. Yu, X. Jiang, and H. Bunke. Combining acoustic and visual classifiers for the recognition of spoken sentences. In *Proc. 15th Int. Conf. on Pattern Recognition*, volume 2, pages 491–494. IEEE, 2000.
199. B. Achermann and H. Bunke. Classifying range images of human faces with the Hausdorff distance. In *Proc. 15th Int. Conf. on Pattern Recognition, Barcelona*, volume 2, pages 813–817, 2000.
200. S. Fischer, M. Binkert, and H. Bunke. Symmetry based indexing of diatoms in an image database. In *Proc. 15th Int. Conf. on Pattern Recognition, Barcelona*, volume 2, pages 899–902. IEEE, 2000.
201. U.-V. Marti and H. Bunke. Handwritten sentence recognition. In *Proc. 15th Int. Conf. on Pattern Recognition, Barcelona*, volume 3, pages 467–470. IEEE, 2000.
202. U.-V. Marti and H. Bunke. Unconstrained handwriting recognition: language models, perplexity and system performance. In *Proc. 7th Int. Workshop on Handwriting Recognition, Amsterdam*, pages 463–468, 2000.
203. S. Fischer, M. Binkert, and H. Bunke. Merkmalsbasierte Suche von Diatomeen in Bilddatenbanken unter Verwendung von Entscheidungsbäumen. In G. Sommer, N. Krueger, and Ch. Perwass, editors, *Mustererkennung 2000*, pages 444–451. Informatik Aktuell, 2000.
204. S. Fischer, M. Binkert, and H. Bunke. Feature based retrieval of diatoms in an image database using decision trees. In J. Blanc-Talon, G. Lasker, and D. Popescu, editors, *Proc. 2nd Int. Symposium on Intelligent Vision Systems*, pages 67–72. IIAS, John Coutts Library Services Ltd., 2000.
205. M. Bayer, H. du Buf, H. Bunke, A. Ciobanu, G. Cristobal, S. Fischer, R. Head, S. Juggins, B. Ludes, D. Mann, J. Pech-Pacheco, J. Roeerdink, L. Santos, and M. Wilkinson. ADIAC: Diatoms go digital. In *Proc. The European Conf. on Marine Science and Ocean Technology, EUROCEAN*, pages 546–551, 2000.
206. X. Jiang, A. Münger, and H. Bunke. Synthesis of representative graphical symbols by computing generalized means. In A. Chhabra and D. Dori, editors, *Graphics Recognition*, volume 1941 of *Lecture Notes in Computer Science*, pages 183–192. Springer, 2000.
207. K. Shearer, S. Venkatesh, and H. Bunke. Rapid similarity retrieval from image and video. In L. Guan, S.-Y. Kung, and J. Larsen, editors, *Multimedia Image and Video Processing*, pages 437–466. CRC Press, 2000.
208. U.V. Marti, D. Wymann, and H. Bunke. OCR on compressed images using pass codes and hidden Markov models. In *Proc. 4th IAPR Int. Workshop on Document Analysis Systems, DAS'2000*, pages 77–86, 2000.
209. K. Yu, X. Jiang, and H. Bunke. Automatic lipreading of sentences combining hidden Markov models and grammars. In *Proc. 2nd Int. Conf. on Audio- and Video-based Biometric Person Identification*, pages 90–95, 1999.
210. P. Shoubridge, M. Kraetzel, H. Bunke, and W. Wallis. Approaches to network change. In *Proc. Defence Applications of Signal Processing*, 1999.
211. K. Sobottka and H. Bunke. Detection of road boundaries in range image sequences. In *Proc. 32nd ISATA*, pages 129–136, 1999.

212. K. Sobottka, P. Zuber, and H. Bunke. Shape based template matching for robust obstacle tracking in low-resolution range image sequences. In J. Blanc-Talon and D. Popescu, editors, *Advanced Concepts for Intelligent Vision Systems*, pages 110–115. The Int. Inst. for Advanced Studies in Systems Research and Cybernetics, 1999.
213. X. Jiang, A. Münger, and H. Bunke. Synthesis of representative symbols by computing generalized median graph. In *Proc. 3rd Int. Workshop on Graphics Recognition*, pages 187–194, 1999.
214. K. Sobottka, H. Bunke, and H. Kronenberg. Identification of text on colored book and journal covers. In *Proc. 5th Int. Conf. on Document Analysis and Recognition*, pages 57–62, 1999.
215. H. Bunke, T. von Siebenthal, T. Yamasaki, and M. Schenkel. Online handwriting data acquisition using a video camera. In *Proc. 5th Int. Conf. on Document Analysis and Recognition*, pages 573–576, 1999.
216. X. Jiang, H. Bunke, and D. Widmer-Kljajo. Skew correction of document images by focused nearest-neighbor clustering. In *Proc. 5th Int. Conf. on Document Analysis and Recognition*, pages 629–632, 1999.
217. U. Marti and H. Bunke. A full English sentence database for off-line handwriting recognition. In *Proc. 5th Int. Conf. on Document Analysis and Recognition*, pages 705–708. IEEE, 1999.
218. G. Kaufmann and H. Bunke. Error localization and correction in check processing. In S.-W. Lee, editor, *Advances in Handwriting Recognition*, pages 111–120. World Scientific, 1999.
219. U.-V. Marti and H. Bunke. Towards general cursive script recognition. In S.-W. Lee, editor, *Advances in Handwriting Recognition*, pages 203–212. World Scientific, 1999.
220. X. Jiang, S. Hofer, T. Stahs, I. Ahrns, and H. Bunke. Extraction and tracking of surfaces in range image sequences. In *Proc. 2nd Int. Conf. on 3-D Digital Imaging and Modeling*, pages 252–260, 1999.
221. K. Sobottka and H. Bunke. Anytime behavior for obstacle tracking. In *Proc. Int. Conf. on Intelligent Transportation Systems*, pages 368–373, 1999.
222. H. Du Buf, M. Bayer, S. Droop, R. Head, S. Juggins, S. Fischer, H. Bunke, M. Wilkinson, J. Roerdink, J. Pech-Pacheco, G. Cristobal, H. Shahbazkia, and A. Ciobanu. Diatom identification: a double challenge called ADIAC. In *Proc. 10th Int. Conf. on Image Analysis and Processing*, pages 734–739, 1999.
223. G. Kaufmann and H. Bunke. A system for the automated reading of check amounts – some key ideas. In S.-W. Lee and Y. Nakano, editors, *Document Analysis Systems: Theory and Practice*, pages 188–200. Springer, 1999.
224. K. Sobottka, E. Meier, F. Ade, and H. Bunke. Towards smarter cars. In H. Christensen, H. Bunke, and H. Noltemeier, editors, *Sensor Based Intelligent Robots*, volume 1724 of *Lecture Notes on Artificial Intelligence*, pages 120–139. Springer, 1999.
225. M. Powell, K. Bowyer, X. Jiang, and H. Bunke. Comparing curved-surface range image segmenters. In *Proc. 6th Int. Conf. on Computer Vision*, pages 286–291, 1998.
226. Jiang. X. and H. Bunke. Range image segmentation: Adaptive grouping of edges into regions. In R. Chin and T.-C. Pong, editors, *Proc. 3rd Asian Conf. on Computer Vision*, volume 1352 of *Lecture Notes in Computer Science*, pages 299–306. Springer, 1998.
227. Jiang. X., M. Binkert, B. Achermann, and H. Bunke. Detection of glasses in facial images. In R. Chin and T.-C. Pong, editors, *Proc. 3rd Asian Conf. on Computer Vision*, volume 1352 of *Lecture Notes in Computer Science*, pages 726–733. Springer, 1998.

228. K. Sobottka and Bunke H. Obstacle detection in range image sequences using radial slope. In *Proc. 3rd IFAC Symposium on Intelligent Autonomous Vehicles*, pages 535–540, 1998.
229. B.T. Messmer and H. Bunke. Clustering and error-correcting matching of graphs for learning and recognition of symbols in engineering drawings. In J. Hull and S. Taylor, editors, *Document Analysis Systems II*, pages 102–117. World Scientific, 1998.
230. H. Bunke. Error-tolerant graph matching: A formal framework and algorithms. In A. Amin, D. Dori, P. Pudil, and H. Freeman, editors, *Advances in Pattern Recognition*, volume 1451 of *Lecture Notes in Computer Science*, pages 1–14. Springer, 1998.
231. X. Jiang and H. Bunke. Marked subgraph isomorphism of ordered graphs. In A. Amin, D. Dori, P. Pudil, and H. Freeman, editors, *Advances in Pattern Recognition*, volume 1451 of *Lecture Notes in Computer Science*, pages 122–131. Springer, 1998.
232. H. Bunke and M. Zumbuehl. Acquisition of 2-D shape models from scenes with overlapping objects using string matching. In A. Amin, D. Dori, P. Pudil, and H. Freeman, editors, *Advances in Pattern Recognition*, volume 1451 of *Lecture Notes in Computer Science*, pages 200–209. Springer, 1998.
233. X. Jiang, T. Binkert, B. Achermann, and H. Bunke. Towards detection of glasses in facial images. In *Proc. 14th Int. Conf. on Pattern Recognition*, pages 1071–1073, 1998.
234. G. Kaufmann and H. Bunke. Amount translation and error localization in check processing using syntax-directed translation. In *Proc. 14th Int. Conf. on Pattern Recognition*, pages 1530–1534, 1998.
235. K. Shearer, S. Venkatesh, and H. Bunke. An efficient least common subgraph algorithm for video indexing. In *Proc. 14th Int. Conf. on Pattern Recognition*, pages 1241–1243. IEEE, 1998.
236. G. Kaufmann and H. Bunke. Error localization and correction in check processing. In *Proc. 6th Int. Workshop on Frontiers in Handwriting Recognition*, pages 77–87, 1998.
237. U.-V. Marti and H. Bunke. Towards general cursive script recognition. In *Proc. 6th Int. Workshop on Frontiers in Handwriting Recognition*, pages 379–388, 1998.
238. B. Achermann, M. Zumbuehl, X. Jiang, and H. Bunke. Matching of nose profiles using weighted hausdorff distance. In *Proc. IEEE Int. Conf. on Intelligent Processing Systems*, 1998.
239. K. Sobottka and H. Bunke. Employing range imagery for vision-based driver assistance. In *SPIE Conf.: Enhanced and Synthetic Vision*, pages 177–188, 1998.
240. H. Kronenberg, Sobottka K., and Bunke H. Textextraktion aus farbigen Buchtitelseiten. In *Vierter Workshop Farbbildverarbeitung*, pages 105–111, 1998.
241. U.-V. Marti and H. Bunke. Erkennung handgeschriebener Wortsequenzen. In P. Levi, R.-J. Ahlers, F. May, and M. Schanz, editors, *Mustererkennung 1998*, Informatik Aktuell, pages 263–270. Springer, 1998.
242. K. Sobottka and H. Bunke. Vision-based driver assistance using range imagery. In *IEEE Int. Conf. on Intelligent Vehicles*, pages 162–167, 1998.
243. G. Kaufmann and H. Bunke. A system for the automated reading of check amounts – some key ideas. In *Proc. 3rd IAPR Workshop on Document Analysis Systems*, pages 302–315, 1998.
244. X. Jiang and H. Bunke. Performance assessment of edge-based range image segmentation. In *Proc. Int. Conf. on Advances in Pattern Recognition*, pages 83–92, 1998.

245. H. du Buf, H. Bunke, S. Droop, J. Roerdink, S. Juggins, G. Cristobal, and B. Ludes. Automatic diatom identification and classification adiac. In *3rd European Marine Science and Technology Conference*, pages 1071–1074, 1998.
246. T.M. Ha and H. Bunke. Image processing methods for document image analysis. In H. Bunke and P. Wang, editors, *Handbook of Character Recognition and Document Image Analysis*, pages 1–47. World Scientific, 1997.
247. D. Möri and H. Bunke. Automatic interpretation and execution of manual corrections on text documents. In H. Bunke and P. Wang, editors, *Handbook of Character Recognition and Document Image Analysis*, pages 679–702. World Scientific, 1997.
248. X. Jiang, H. Bunke, and U. Meier. Towards (quasi) real-time range image segmentation. In R.C. Bolles, H. Bunke, and H. Noltemeier, editors, *Intelligent Robots – Sensing, Modeling and Planning*, pages 149–163. World Scientific, 1997.
249. J. Lladós, H. Bunke, and E. Martí. Using cyclic string matching to find rotational and reflectional symmetries in shapes. In R.C. Bolles, H. Bunke, and H. Noltemeier, editors, *Intelligent Robots – Sensing, Modeling and Planning*, pages 164–179. World Scientific, 1997.
250. K. Shearer, H. Bunke, S. Venkatesh, and D. Kieronska. Efficient graph matching for video indexing. In *Preproceedings IAPR Workshop on Graph Based Representations*, pages 1–6, 1997.
251. T.M. Ha, G. Kaufmann, M. Zimmermann, and H. Bunke. Handwriting recognition for a postal check reading system. In *Proc. 1st Int. Conf. on Knowledge Based Intelligent Electronic Systems*, pages 54–63, 1997.
252. K. Sobottka, X. Jiang, and H. Bunke. Spatiotemporal segmentation of range image sequences into planar surfaces for collision avoidance. In *Proc. 30th Int. Symposium on Automotive Technology and Automation*, pages 69–76, 1997.
253. B. Achermann, R. Peleg, X. Jiang, H. Bunke, D. Feinendegen, Y. Bruehlmann, and H. Tschopp. Computer-based assistance of surgeons in the judgement of plastic nose surgeries (rhinoplasty). In *Proc. IEEE/ASME Int. Conf. on Advanced Intelligent Mechatronics*, page 21, 1997.
254. G. Kaufmann, H. Bunke, and T.M. Ha. Recognition of cursively handwritten words using a combined normalization/perturbation approach. In A. Downton and S. Impedovo, editors, *Progress in Handwriting Recognition*, pages 21–28. World Scientific, 1997.
255. G. Kaufmann, H. Bunke, and M. Hadorn. Lexicon reduction in an HMM-framework based on quantized feature vectors. In *Proc. Int. Conf. on Document Analysis and Recognition*, pages 1097–1101, 1997.
256. H. Bunke, R. Ammann, G. Kaufmann, Ha T.M., M. Schenkel, R. Seiler, and F. Eggimann. Recovery of temporal information of cursively handwritten words for on-line recognition. In *Proc. Int. Conf. on Document Analysis and Recognition*, pages 931–935, 1997.
257. H. Bunke, R. Gonin, and D. Möri. A tool for versatile and user-friendly document correction. In *Proc. Int. Conf. on Document Analysis and Recognition*, pages 433–438, 1997.
258. B.T. Messmer and H. Bunke. Fast error-correcting graph isomorphism based on model precompilation. In A. Del Bimbo, editor, *Image Analysis and Processing*, volume 1310 of *Lecture Notes in Computer Science*, pages 693–700. Springer, 1997.
259. U.V. Martí, G. Kaufmann, and H. Bunke. Cursive script recognition with time delay neural network using learning hints. In A. Gerstner, M. Hasler, and Nicoud. D., editors, *Artificial Neural Networks*, pages 973–979. Springer, 1997.

260. B. Achermann, X. Jiang, and H. Bunke. Face recognition using range images. In *Proc. Int. Conf. on Virtual Systems and MultiMedia*, pages 126–136, 1997.
261. K. Yu, X. Jiang, and H. Bunke. Lipreading using Fourier transform over time. In G. Sommer, K. Daniilidis, and J. Pauli, editors, *Computer Analysis of Images and Patterns*, volume 1296 of *Lecture Notes in Computer Science*, pages 472–479. Springer, 1997.
262. U.V. Marti, G. Kaufmann, and H. Bunke. Time Delay Neural Network mit Lernhilfe in der Off-line Handschrifterkennung. In E. Paulus and F. Wahl, editors, *Mustererkennung 1997*, Informatik Aktuell, pages 305–312. Springer, 1997.
263. W. Rodriguez, A. Kandel, and H. Bunke. 3d-curve similarity using fuzzy string matching. In *Proc. 6th IEEE Conf. on Fuzzy Systems, Barcelona*, pages 79–82, 1997.
264. W. Rodriguez, A. Kandel, and H. Bunke. A fuzzy information space approach to measure the similarity of dynamical systems. In *Proc. Int. Conf. on Fuzzy Logic and Applications*, pages 203–209, 1997.
265. A. Kandel, Y.-Q. Zhang, and H. Bunke. A genetic fuzzy neural network for pattern recognition. In *Proc. 6th IEEE Conf. on Fuzzy Systems*, pages 75–78, 1997.
266. X.-Y. Jiang, U. Meier, and H. Bunke. Fast range image segmentation using high-level segmentation primitives. In *Proc. 3rd IEEE Workshop on Applications of Computer Vision*, pages 83,88, Sarasota, Florida, 1996.
267. H. Bunke. Edit distance of regular languages. In *Proc. 5th Annual Symposium on Document Analysis and Information Retrieval*, pages 113–124, 1996.
268. B. T. Messmer and H. Bunke. Automatic learning and recognition of graphical symbols in engineering drawings. In R. Kasturi and K. Tombre, editors, *Graphics Recognition*, volume 1072 of *Lecture Notes in Computer Science*, pages 123–134. Springer, 1996.
269. G. Kaufmann, H. Bunke, and T.M. Ha. Recognition of cursively handwritten words using a combined normalization/perturbation approach. In *Proc. 5th Int. Workshop on Frontiers in Handwriting Recognition*, pages 17–22, 1996.
270. X. Jiang and H. Bunke. Including geometry in graph representations: a quadratic time isomorphism algorithm and its applications. In P. Perner, P. Wang, and A. Rosenfeld, editors, *Advances in Structural and Syntactic Pattern Recognition*, volume 1121 of *Lecture Notes in Computer Science*, pages 110–119. Springer, 1996.
271. B. Achermann and H. Bunke. Combination of face classifiers for person identification. In *Proc. 13th Int. Conf. on Pattern Recognition*, volume III, pages 416–420, 1996.
272. K. Yu, X. Jiang, and H. Bunke. Robust facial profile recognition. In *Proc. IEEE Int. Conf. on Image Processing*, pages 491–494, 1996.
273. G. Kaufmann, T.M. Ha, and H. Bunke. Einsatz eines Perturbation-Ansatzes für die Erkennung handgeschriebener deutscher Grundzahlwörter. In B. Jähne, P. Geisler, H. Haussecker, and F. Hering, editors, *Mustererkennung 1996*, Informatik Aktuell, pages 63–70. Springer, 1996.
274. X. Jiang, U. Meier, and H. Bunke. Schnelle Segmentierung von Tiefenbildern. In B. Jähne, P. Geisler, H. Haussecker, and F. Hering, editors, *Mustererkennung 1996*, Informatik Aktuell, pages 400–407. Springer, 1996.
275. B.T. Messmer and H. Bunke. Clustering and error-correcting matching of graphs for learning and recognition of symbols in engineering drawings. In *Proc. Workshop on Document Analysis Systems*, pages 282–296, 1996.

276. B.T. Messmer and H. Bunke. Subgraph isomorphism detection in polynomial time on preprocessed model graphs. In S.Z. Li, D.P. Mital, E.K. Teoh, and H. Wang, editors, *Recent Developments in Computer Vision*, volume 1035 of *Lecture Notes in Computer Science*, pages 373–382. Springer, 1996.
277. T.M. Ha, H. Bunke, and G. Kaufmann. Perturbation models: a new approach to improving handwriting recognition. In *Proc. MVA'96 IAPR Workshop on Machine Vision Applications, Tokyo*, pages 151–159, 1996.
278. X. Jiang and H. Bunke. Robust and fast edge detection and description in range images. In *Proc. MVA'96 IAPR Workshop on Machine Vision Applications, Tokyo*, pages 538–541, 1996.
279. R. Robmann and H. Bunke. An edge labeling scheme for polyhedra in incomplete range images. In G. Borgefors, editor, *Theory and Applications of Image Analysis II*, pages 53–64. World Scientific, 1995.
280. R. Robmann and H. Bunke. An edge labeling scheme for polyhedra in incomplete range images. In *Proc. 9th Scandinavian Conf. on Image Analysis*, pages 723–730, 1995.
281. K. Yu, X. Jiang, and H. Bunke. Face recognition by profile analysis. In *Proc. Int. Workshop on Face, - and Gesture-Recognition*, pages 208–213, 1995.
282. A. Ueltschi and H. Bunke. Model-based recognition of three-dimensional objects from incomplete range data. In F. A. Sadjadi, editor, *Automatic Object Recognition V, SPIE Proceedings*, volume 2485, pages 74–84, 1995.
283. R. Robmann and H. Bunke. Towards robust edge extraction - a fusion based approach using greylevel and range images. In F. A. Sadjadi, editor, *Automatic Object Recognition V, SPIE Proceedings*, volume 2485, pages 249–259, 1995.
284. B.T. Messmer and H. Bunke. Automatic learning and recognition of graphical symbols in engineering drawings. In *Proc. Int. Workshop on Graphics Recognition*, pages 33–43, 1995.
285. H. Bunke and R. Liviero. Classification and postprocessing of documents using an error-correcting parser. In *Proc. 3rd Int. Conf. on Document Analysis and Recognition*, pages 222–226, 1995.
286. T. M. Ha, D. Niggeler, and H. Bunke. A system for segmenting and recognising totally unconstrained handwritten numeral strings. In *Proc. 3rd Int. Conf. on Document Analysis and Recognition*, pages 1003–1009, 1995.
287. H. Bunke and B. T. Messmer. Efficient attributed graph matching and its application to image analysis. In C. Braccini, L. DeFloriani, and G. Vernazza, editors, *Image Analysis and Processing*, volume 974 of *Lecture Notes in Computer Science*, pages 45–55. Springer, 1995.
288. K. Yu, B. Achermann, C. Nyffenegger, X. Jiang, H. Bunke, and E.G. Schukat-Talamazzini. Kombination von frontal- und profilanalyse menschlicher gesichter. In G. Sagerer, S. Posch, and F. Kummert, editors, *Mustererkennung 1995*, Informatik Aktuell, pages 327–334. Springer, 1995.
289. D. Möri and H. Bunke. Off-line interpretation and execution of corrections on text documents. In A. L. Spitz and A. Dengel, editors, *Document Analysis Systems*, pages 397–412. World Scientific, 1995.
290. X.Y. Jiang and H. Bunke. A framework for symmetry exploration in 3d object recognition. In D. Dori and A. Bruckstein, editors, *Shape, Structure and Pattern Recognition*, pages 138–147. World Scientific, 1995.

291. A. Ueltschi and H. Bunke. 3d object recognition from range data using a relational matching technique with a hierarchy of constraints. In D. Dori and A. Bruckstein, editors, *Shape, Structure and Pattern Recognition*, pages 148–157. World Scientific, 1995.
292. B. T. Messmer and H. Bunke. Efficient error-tolerant subgraph isomorphism detection. In D. Dori and A. Bruckstein, editors, *Shape, Structure and Pattern Recognition*, pages 231–240. World Scientific, 1995.
293. J. Kanai, S. Latifi, G. Rajarathinam, G. Nagy, and H. Bunke. Operations on compressed image data. In *Proc. Data Compression Conf., Snowbird, Utah*, page 432 (abstract), 1995.
294. X.-Y. Jiang and H. Bunke. Exploration of object symmetries in computer vision and robotics. In H. Bunke, T. Kanade, and H. Noltemeier, editors, *Modelling and Planning for Sensor Based Intelligent Robot Systems*, pages 257–272. World Scientific, 1995.
295. H. Bunke, X. Jiang, A. Ueltschi, U. Meier, and R. Robmann. Model-based multisensory robot vision. In H. Bunke, T. Kanade, and H. Noltemeier, editors, *Modelling and Planning for Sensor based Intelligent Robot Systems*, pages 289–308. World Scientific, 1995.
296. A. Hoover, G. Jean-Baptiste, X. Jiang, P. Flynn, H. Bunke, D. Goldgof, and K. Bowyer. Range image segmentation: The user’s dilemma. In *Proc. IEEE Int. Symposium on Computer Vision*, 1995.
297. B. Messmer and H. Bunke. Subgraph isomorphism detection in quadratic time on preprocessed model graphs. In *Proc. 2nd Asian Conf. on Computer Vision, Singapore*, 1995.
298. X. Jiang, A. Hoover, G. Jean-Baptiste, D. Goldgof, K. Bowyer, and H. Bunke. A methodology for evaluating edge detection techniques for range images. In *Proc. 2nd Asian Conf. on Computer Vision*, 1995.
299. D. Mōri and H. Bunke. Automatic error recognition and corrections in text documents. In *Proc. 3rd Int. Conf. Interface to Real and Virtual Worlds*, pages 175–184, 1994.
300. F. Grimm, X. Fabregas, H. Bunke, and T. Haenni. A fuzzy logic expert system for the diagnosis of thyroid gland function. In *Proc. Int. Conf. on Medical Physics and Biomedical Engineering*, pages 112–116, 1994.
301. X. Jiang and H. Bunke. Line segment based axial motion stereo. In S. Impedovo, editor, *Progress in Image Analysis and Processing III*, pages 497–504. World Scientific, 1994.
302. H. Bunke and B. Messmer. Similarity measures for structured representations. In S. Wess, K.-D. Althoff, and M. Richter, editors, *Topics in Case-Based Reasoning*, volume 837 of *Lecture Notes in Artificial Intelligence*, pages 106–118. Springer, 1994.
303. X. Jiang and H. Bunke. Vision planner for an intelligent multisensory vision system. In F. A. Sadjadi, editor, *Automatic Object Recognition IV, SPIE Proceedings*, volume 2234, pages 226–237, 1994.
304. A. Ueltschi and H. Bunke. Effiziente modellbasierte Objekterkennung in Tiefenbildern. In W. G. Kropatsch and H. Bischof, editors, *Mustererkennung 1994*, Informatik Xpress 5, pages 81–90. Springer, 1994.
305. B. T. Messmer and H. Bunke. Erkennen und Lernen zweidimensionaler Objekte mittels Subgraph-Isomorphismus. In W. G. Kropatsch and H. Bischof, editors, *Mustererkennung 1994*, Informatik Xpress 5, pages 377–386. Springer, 1994.
306. X. Jiang, U. Meier, and H. Bunke. Scale-invariant polyhedral object recognition using fragmentary edge segments. In *Proc. 12th Int. Conf. on Pattern Recognition*, pages 850–853, 1994.

307. H. Bunke, M. Roth, and E.G. Schukat-Talamazzini. Off-line recognition of cursive script produced by a cooperative writer. In *Proc. 12th Int. Conf. on Pattern Recognition*, pages 383–386, 1994.
308. X. Jiang and H. Bunke. An intelligent planner for multisensory robot vision. In E.S. Gelsema and L.N. Kanal, editors, *Pattern Recognition in Practice IV*, pages 489–500. Elsevier Science Inc., 1994.
309. D. Möri and H. Bunke. Off-line interpretation and execution of corrections in text documents. In A. Dengel and L. Spitz, editors, *Pro. Document Analysis Systems*, pages 401–416, 1994.
310. F. Grimm, X. Fabregas, H. Bunke, S. Weiss, and R. Wittwer. Knowledge-based interpretation of thyroid scintigrams. In *Proc. 2nd IEEE Workshop on Applications of Computer Vision*, pages 230–239, 1994.
311. T.M. Ha and H. Bunke. Handwritten numeral recognition by perturbation method. In *Proc. 4th Int. Workshop on handwriting Recognition*, pages 97–106, 1994.
312. X. Jiang, U. Meier, R. Robmann, A. Ueltschi, and H. Bunke. A multisensory robot vision system for three-dimensional object recognition. In R. Bless, editor, *Proc. 2nd NRP 23-Symposium on Artificial Intelligence and Robotics*, pages 75–90, 1994.
313. B. Messmer and H. Bunke. Recognition and automatic learning of graphics symbols by means of graph matching. In *Proc. Priority Programme Informatics Research, Information Conf. Module 2 Knowledge Based Systems*, pages 54–63, 1994.
314. H. Bunke. Structural and syntactic pattern recognition. In C.-H. Chen, L.F. Pau, and P. Wang, editors, *Handbook of Pattern Recognition and Computer Vision*, pages 163–209. World Scientific Publ. Co., Singapore, 1993.
315. H. Bunke. Recent advances in string matching. In H. Bunke, editor, *Advances in Structural and Syntactic Pattern Recognition*, pages 3–21. World Scientific, 1993.
316. R. Sastry, N. Ranganathan, and H. Bunke. Systolic architectures for partial polygon recognition. In H. Bunke, editor, *Advances in Structural and Syntactic Pattern recognition*, pages 542–551. World Scientific, 1993.
317. R. Sastry, N. Ranganathan, and H. Bunke. Hardware algorithms for polygon matching. In *Proc. 6th Int. Conf. on VLSI Design*, pages 41–44, 1993.
318. X. Jiang and H. Bunke. Fast extraction of planar surfaces from range images. In *Proc. SPIE Conf. on Applications of Artificial Intelligence: Machine Vision and Robotics*, pages 211–221, 1993.
319. T. Ha Minh and H. Bunke. Very fast recognition of giro check forms. In D. P. D’Amato, editor, *Character Recognition Technologies, SPIE Proc.*, volume 1906, pages 100–111, 1993.
320. F. Grimm, H. Bunke, and J. Haehlen. An approach to expert systems for image processing libraries. In E. N. Houstis, J. R. Rice, and R. Vichnevetsky, editors, *3rd Int. Conf. on Expert Systems for Numerical Computing*, pages 34–36. 1993.
321. X. Jiang and H. Bunke. Detection and application of polyhedral symmetry: a review. In *Proc. 8th Scandinavian Conf. on Image Analysis*, pages 345–352, 1993.
322. X. Jiang and H. Bunke. Quantization errors in active range sensing. In *Proc. 8th Scandinavian Conf. on Image Analysis*, pages 913–920, 1993.

323. H. Bunke and B. Messmer. A new algorithm for efficient subgraph matching. In G. Vernazza, A. N. Venetsanopoulos, and C. Braccini, editors, *Image Processing: Theory and Applications*, pages 303–307. Elsevier Science Inc., 1993.
324. J. Dvorak and H. Bunke. Using clos to implement a hybrid knowledge representation tool. In A. Paepcke, editor, *Object Oriented Programming – The CLOS Perspective*, pages 295–320. MIT Press, 1993.
325. X. Jiang and H. Bunke. Polyhedral symmetry: detection algorithms and application to 3d object recognition. In F. Ade, M. Rutishauser, and M. Trobina, editors, *Proc. Conf. Swiss Vision '93*, pages 169–177, 1993.
326. D. Möri and H. Bunke. Automatische Erkennung und Ausführung von Korrekturanweisungen in Textdokumenten. In S. Poepl and H. Handels, editors, *Mustererkennung 1993*, Informatik aktuell, pages 678–685. Springer, 1993.
327. X. Jiang and H. Bunke. Range data acquisition by coded structured light: error characteristic of binary and gray projection code. In A. Gruen and H. Kahmen, editors, *Optical 3-D Measurement Techniques II*, pages 386–393. Wichmann Verlag, 1993.
328. H. Bunke. A fast algorithm for finding the nearest neighbor of a word in a dictionary. In *Proc. 2nd Int. Conf. on Document Analysis and Recognition*, pages 632–637, 1993.
329. H. Bunke and G. Kaufmann. Jigsaw puzzle solving using approximate string matching and best-first search. In D. Chetverikov and W. G. Kropatsch, editors, *Computer Analysis of Images and Patterns*, Lecture Notes in Computer Science, pages 299–308. Springer, 1993.
330. H. Bunke and B. T. Messmer. Similarity measures for structured representations. In M. M. Richter, S. Wess, K.-D. Althoff, and F. Maurer, editors, *Preproceedings EWCBR-93, First European Workshop on Case-Based Reasoning*, pages 26–31. University of Kaiserslautern, 1993.
331. X. Jiang, R. Robmann, A. Ueltschi, and H. Bunke. An intelligent multisensory vision system. In R. Bless, editor, *NRP 23-Symposium on Artificial Intelligence and Robotics*, pages 79–84. Zürich, 1993.
332. H. Bunke and B. Haller. Syntactic analysis of context-free plex languages for pattern recognition. In H. Baird, H. Bunke, and K. Yamamoto, editors, *Structured Document Image Analysis*, pages 500–519. Springer Verlag, 1992.
333. L.B. Holder, D.J. Cook, and H. Bunke. Fuzzy substructure discovery. In Edwards P. Sleeman, D., editor, *Proceedings of the Ninth International Conference on Machine Learning*, pages 218–223. Morgan Kaufman, 1992.
334. H. Bunke and U. Bühler. Invariant shape recognition using string matching. In *Proc. 2nd International Conference on Automation, Robotics and Computer Vision*, Singapore, 1992.
335. X.-Y. Jiang and H. Bunke. Eine methode zur schnellen segmentierung von tiefenbildern in planare regionen. In S. Fuchs and R. Hoffmann, editors, *Mustererkennung 1992*, Informatik Aktuell, pages 141–149. Springer Verlag, 1992.
336. H. Bunke and J. Csirik. Inference of edit costs using parametric string matching. In *Proc. 11th ICPR*, volume 2, pages 549–552, The Hague, 1992.
337. T. Glauser and H. Bunke. Edge length ratios: An affine invariant shape representation for recognition with occlusions. In *Proc. 11th ICPR*, volume 1, pages 437–440, The Hague, 1992.

338. H. Bunke and A. Sanfeliu. Statistical and syntactic models. pattern recognition techniques. In C. Torras, editor, *Computer Vision, Theory and Industrial Applications*, pages 215–266. Springer Verlag, 1992.
339. H. Bunke and X.-Y. Jiang. Efficient computation of moments by recursion. In V. Cantoni, M. Ferretti, S. Levialdi, R. Negrini, and R. Stefanelli, editors, *Progress in Image Analysis and Processing II*, pages 155–162. World Scientific Publ. Co., 1992.
340. H. Bunke, T. Glauser, and T.-H. Tran. Efficient matching of dynamically changing graphs. In P. Johansen and O. Olsen, editors, *Theory and applications of image analysis*, pages 110–124. World Scientific Publ. Co., 1992.
341. X.-Y. Jiang and H. Bunke. Determining the symmetry of polyhedra. In C. Arcelli, L. Cordella, and G. Sanniti Di Baja, editors, *Visual Form Analysis and Recognition*, pages 303–312. Plenum Press, 1992.
342. X.-Y. Jiang and H. Bunke. Optimal decomposition of arbitrary-shaped structuring elements in neighborhood subsets. In K.W. Bowyer, editor, *Applications of Artificial Intelligence X: Machine Vision and Robotics. Proceedings SPIE*, volume 1708, pages 724–735. 1992.
343. H. Bunke and J. Csirik. Edit distance of run-length coded strings. In H. Berghel et al., editors, *Applied Computing: Technological Challenges of the 1990s. Proc. of the 1992 ACM/SIGAPP Symposium on Applied Computing*, pages 137–143, Kansas City, 1992.
344. X.-Y. Jiang, R. Robmann, and H. Bunke. An application of distance transform to range image segmentation. In D.P. Casasent, editor, *Intelligent Robots and Computer Vision X: Algorithms and Techniques*, volume 1607 of *Proceedings SPIE*, pages 110–121. 1992.
345. H. Bunke, H.-S. Lim, and U. Meier. Location of polyhedral objects in 3-d space from three unconstrained edge points. In D.P. Casasent, editor, *Intelligent Robots and Computer Vision X: Neural, Biological, and 3-D Methods*, volume 1608 of *Proceedings SPIE*, pages 366–377. 1992.
346. X.-Y. Jiang and H. Bunke. Optimal vertex ordering of a graph and its application to symmetry detection. In Berghammer R. Schmidt, G., editor, *Graph-Theoretic Concepts in Computer Science*, volume 570 of *Lecture Notes in Computer Science*, pages 148–158. Springer-Verlag, 1992.
347. H. Bunke. Graph grammars – a useful tool for pattern recognition? In H. Ehrig, H.-J. Kreowski, and G. Rozenberg, editors, *Graph Grammars and their Application to Computer Science*, volume 532 of *Lecture Notes in Computer Science*, pages 43–46. Springer Verlag, 1991.
348. H. Bunke, T. Glauser, and T.-H. Tran. An efficient implementation of graph grammars based on the rete matching algorithm. In H. Ehrig, H.-J. Kreowski, and G. Rozenberg, editors, *Graph Grammars and their Application to Computer Science*, volume 532 of *Lecture Notes in Computer Science*, pages 174–189. Springer Verlag, 1991.
349. J. Dvorak and H. Bunke. A hybrid expert system shell for computer vision. In *Proc. of the 1st World Congress on Expert Systems*, pages 1160–1168, Orlando, Florida, 1991.
350. X.-Y. Jiang and H. Bunke. Determination of the symmetries of polyhedra and an application to object recognition. In H. Bieri and H. Noltemeier, editors, *Proc. Int. Workshop on Computational Geometry – Methods, Algorithms and Applications*, volume 553 of *Lecture Notes in Computer Science*, pages 113–121, Bern, 1991. Springer-Verlag.
351. X.-Y. Jiang and H. Bunke. Ein konturbasierter Ansatz zur Berechnung von Momenten. In B. Radig, editor, *Proc. 13th German Pattern Recognition Symposium (DAGM)*, volume 290 of *Informatik Fachberichte*, pages 143–150, München, 1991. Springer-Verlag.

352. H. Bunke, T. Glauser, and T.-H. Tran. Efficient matching of dynamically changing graphs. In *Proc. of the 7th Scandinavian Conference on Image Analysis (SCAI)*, pages 282–290, Aalborg, Denmark, 1991. Short version of Technical Report IAM-91-009, University of Bern, Institut für Informatik und angewandte Mathematik, 1991.
353. J. Dvorak and H. Bunke. Using CLOS to implement a hybrid computer vision tool. In A. Paepcke, editor, *Proceedings of the Third CLOS Users and Implementors Workshop*, pages 24–31, 1990.
354. F. Grimm, M. Song, and H. Bunke. A flexible approach to the construction of expert systems for the application of image processing software. In *IAPR International Workshop on Machine Vision Applications*, pages 67–70, Tokyo, 1990.
355. X.-Y. Jiang and H. Bunke. Detektion von Symmetrien polyedrischer Objekte. In *Mustererkennung 1990*, volume 254 of *Informatik Fachberichte*, pages 225–231. Springer Verlag, 1990.
356. X.-Y. Jiang and H. Bunke. Erkennung von 3-D Objekten in Nadeldiagrammen mit Hilfe von Konsistenzbedingungen. In *Proceedings German Workshop on Artificial Intelligence 1990*, volume 251 of *Informatik Fachberichte*, pages 282–291. Springer-Verlag, 1990.
357. H. Bunke and H.-S. Lim. Pose determination of polyhedral objects from unconstrained 3-D edge points. In *Proceedings ISPRS-Conference*, pages 916–923, Zürich, 1990.
358. H. Bunke and B. Haller. Syntactic analysis of context-free plex languages for pattern recognition. In H. Baird, editor, *Pre-Proceedings Workshop on Syntactic and Structural Pattern Recognition*, pages 57–77, Murray Hill, 1990.
359. X.-Y. Jiang and H. Bunke. Recognizing 3-D objects in needle maps. In *Proceedings 10th International Conference on Pattern Recognition*, pages 237–239, Atlantic City, 1990.
360. H. Bunke and B. Haller. A parser for context free plex grammars. In M. Nagl, editor, *Graph-Theoretic Concepts in Computer Science*, volume 411 of *Lecture Notes in Computer Science*, pages 136–150. Springer Verlag, 1990.
361. H. Bunke. Working group: Hybrid methods. In R. Mohr et al., editors, *Structural Pattern Analysis*, pages 245–257. World Scientific Publ. Co., 1990.
362. E. Gmür and H. Bunke. 3-d object recognition based on subgraph matching in polynomial time. In R. Mohr et al., editors, *Structural Pattern Analysis*, pages 131–147. World Scientific Publ. Co., 1990.
363. H. Bunke and D. Pasche. Parsing multivalued strings and its application to image and waveform recognition. In R. Mohr et al., editors, *Structural Pattern Analysis*, pages 1–15. World Scientific Publ. Co., 1990.
364. H. Bunke. Hybrid pattern recognition methods. In H. Bunke and A. Sanfeliu, editors, *Syntactic and Structural Pattern Recognition – Theory and Applications*, pages 307–347. World Scientific Publ. Co., Singapore, 1990.
365. H. Bunke. String matching for structural pattern recognition. In H. Bunke and A. Sanfeliu, editors, *Syntactic and Structural Pattern Recognition – Theory and Applications*, pages 119–144. World Scientific Publ. Co., Singapore, 1990.
366. H. Bunke. String grammars for syntactic pattern recognition. In H. Bunke and A. Sanfeliu, editors, *Syntactic and Structural Pattern Recognition – Theory and Applications*, pages 29–54. World Scientific Publ. Co., Singapore, 1990.

367. X.-Y. Jiang and H. Bunke. Recognition of overlapping convex objects using interpretation tree search and egi matching. In A. Tescher, editor, *Applications of Digital Image Processing XII, SPIE Proceedings*, volume 1153, pages 611–620, 1989.
368. T. Glauser and H. Bunke. Generierung von Entscheidungsbäumen aus CAD-Modellen für Erkennungsaufgaben. In H. Burckhardt, K.H. Hoehnke, and B. Neumann, editors, *Mustererkennung 1989*, volume 219 of *Informatik Fachberichte*, pages 334–340. Springer-Verlag, 1989.
369. T. Glauser, E. Gmür, X.-Y. Jiang, and H. Bunke. Deductive generation of vision representations from CAD-models. In *Proc. 6th Scandinavian Conference on Image Analysis*, pages 645–651, Oulu, Finland, 1989.
370. F. Grimm and H. Bunke. An expert system for the application of image processing subroutines. In K. Voss, D. Chetverikov, and G. Sommer, editors, *Computer Analysis of Images and Patterns*, pages 202–207. Akademie Verlag, Berlin, 1989.
371. F. Grimm and H. Bunke. An approach to constructing software configuration expert systems. In M.H. Hamza, editor, *Applied Informatics, Proc. of the IASTED International Symposium*, pages 47–50, Anaheim, 1989. Actapress.
372. F. Grimm and H. Bunke. An expert system for software configuration and its application to computer vision. In M.M. Trivedi, editor, *Applications of Artificial Intelligence, VII, SPIE-Proceedings*, volume 1095, pages 172–183. 1989.
373. J. Csirik and H. Bunke. Longest k-distance substrings of two strings. In *Proceedings 9th Int. Conference on Pattern Recognition*, pages 69–71, Rome, 1988.
374. E. Gmür and H. Bunke. PH-1: A robot vision system based on CAD-models. In H. Bunke, editor, *Artificial Intelligence in Manufacturing, Assembly, and Robotics*. Oldenbourg Verlag, Munich, 1988.
375. E. Gmür and H. Bunke. PH-1: Ein CAD-basiertes Roboter Sichtsystem. In H. Bunke, O. Kübler, and P. Stucki, editors, *Mustererkennung 1988*, volume 180 of *Informatik Fachberichte*, pages 240–247. Springer-Verlag, 1988.
376. X.Y. Jiang and H. Bunke. Segmentierung von Nadeldiagrammen von Objekten mit gekrümmten Oberflächen. In H. Bunke, O. Kübler, and P. Stucki, editors, *Mustererkennung 1988*, volume 180 of *Informatik Fachberichte*, pages 255–261. Springer-Verlag, 1988.
377. E. Gmür and H. Bunke. 3D object recognition based on subgraph matching in polynomial time. In *Proc. IAPR Int. Workshop on Syntactical and Structural Pattern Recognition*, pages 30–42, Pont--Mousson, France, 1988.
378. H. Bunke and D. Pasche. Parsing multivalued strings and its application to image and waveform recognition. In *Proc. IAPR Int. Workshop on Syntactical and Structural Pattern Recognition*, pages 1–17, Pont-- Mousson, France, 1988.
379. H. Bunke, F. Flückiger, F. Ludin, and F. Conti. Diagnostic expert systems in neurology—a comparison between a rule based prototype and a database oriented approach. In O. Rienhoff, O. Piccolo, and B. Schneider, editors, *Expert Systems and Decision Support Systems in Medicine*, volume 36 of *Lecture Notes in Medical Informatics*, pages 209–212. Springer-Verlag, 1988.
380. H. Bunke and D. Pasche. A new syntactic parsing method and its application to the tracking of noisy contours in images. In J.L. Lacoume et al., editors, *Signal Processing IV: Theories and Applications*, pages 1201–1204. North-Holland, 1988.

381. H. Bunke. Hybrid approaches. In G. Ferrate, A. Pavlidis, A. Sanfeliu, and H. Bunke, editors, *Syntactic and Structural Pattern Recognition*, NATO ASI Series, pages 335–361. Springer-Verlag, 1988.
382. H. Bunke, M. Stolze, and M. Wyss. INDEX – a diagnostic expert system for a mail inserter machine. In *Proc. of the IASTED Int. Symp. on Applied Informatics*, pages 151–154, Anaheim, 1988. Acta Press.
383. E. Gmür and H. Bunke. A CAD-based robot vision system. In *Proceedings of the IASTED Int. Symp. on Applied Informatics*, pages 49–52, Anaheim, 1988. Acta Press.
384. J. Dvorak and H. Bunke. Expertensystemschalen und deklarative Programmierung für die Implementation von Bildanalysealgorithmen. In E. Paulus, editor, *Mustererkennung 1987, 9. DAGM-Symposium*, volume 149 of *Informatik Fachberichte*, pages 20–24, Braunschweig, 1987. Springer-Verlag.
385. H. Bunke. Knowledge based pictorial pattern recognition. In D. Meyer-Ebrecht, editor, *ASST 87 6. Aachener Symposium für Signaltheorie. Mehrdimensionale Signale und Bildverarbeitung*, volume 153 of *Informatik Fachberichte*, pages 143–154. Springer-Verlag, 1987.
386. H. Bunke. Hybrid methods in pattern recognition. In P.A. Devijver and J. Kittler, editors, *Pattern Recognition Theory and Applications*, pages 367–382. Springer NATO ASI Series, 1987.
387. J. Dvorak and H. Bunke. Expert system shells and logic programming for the implementation of image analysis algorithms. In *Proc. 5th Scand. Conf. on Image Analysis*, pages 93–100, 1987.
388. H. Bunke. Knowledge based systems and computer vision. In *Proc. SEAS Spring Meeting*, pages 473–488, Heidelberg, 1986.
389. H. Bunke. Knowledge based image understanding and its application in medicine. In *Proc. 12th Colloquium on Application of Computational and Cybernetic Methods in Medicine and Biology*, pages 1–19, Szeged, Hungary, 1985.
390. H. Niemann, H. Bunke, I. Hofmann, and G. Sagerer. Diagnostic inferences from image sequences – a knowledge based approach. In *Proc. 1st Conference on Artificial Intelligence Applications*, pages 610–616, Denver, Colorado, 1984.
391. H. Bunke, H. Feistel, I. Hofmann, H. Niemann, and G. Sagerer. Ein wissensbasiertes System zur automatischen Auswertung von Bildsequenzen des menschlichen Herzens. In W. (Hrsg.) Kropatsch, editor, *Mustererkennung*, volume 87 of *Informatik Fachberichte*, pages 276–282. Springer-Verlag, 1984.
392. I. Bunke, H. and Hofmann, G. Sagerer, and H. Niemann. Automatic analysis of medical image sequences. In *Proc. Int. AMSE Conf. on Modelling and Simulation*, pages 173–181, Athen, 1984.
393. G. Sagerer, I. Hofmann, H. Bunke, and H. Niemann. A system for the evaluation of medical image sequences using expert knowledge. In *Proc. 6th European Conference on Artificial Intelligence, ECCAI 84*, page 660, Pisa, 1984.
394. H. Bunke, H. Feistel, H. Niemann, G. Sagerer, and F. Wolf. Artificial intelligence and image understanding methods in a system for the automatic diagnostic evaluation of technetium 99-m gated blood pool studies. In *Proc. IEEE Comp. Soc. International Symposium on Medical Images and Icons*, pages 417–423, Arlington, Virginia, 1984.

395. H. Bunke. Segmentation of the left ventricle in scintigraphic image sequences. In V. Capellini and A.G. Constantinides, editors, *Digital Signal Processing-84*, pages 710–714, North Holland, 1984.
396. H. Bunke and G. Sagerer. Use and representation of knowledge in image understanding based on semantic networks. In *Proc. 7th International Conference on Pattern Recognition*, pages 1135–1137, Montreal, 1984.
397. H. Bunke, K. Grebner, and G. Sagerer. Syntactic analysis of noisy input strings with an application to the analysis of heart-volume curves. In *Proc. 7th International Conference on Pattern Recognition*, pages 1145–1147, Montreal, 1984.
398. H. Bunke and G. Sagerer. A system for diagnostic evaluation of scintigraphic image sequences. In B. (ed.) Neumann, editor, *GWAI-83, 7th German Workshop on Artificial Intelligence*, volume 76 of *Informatik Fachberichte*, pages 50–59, Dassel/Solling, 1983. Springer-Verlag.
399. H. Bunke et al. System für die qualitative und quantitative Analyse von EKG- getriggerten Herzbinnenraumstudien auf der Basis der Mustererkennung und der künstlichen Intelligenz. In G. Hör, M. Kaltenbach, F.D. Maul, and H.W. (Hrsg.) Pabst, editors, *Interventionelle Nuklearkardiologie*, pages 232–246. 1983.
400. H. Bunke. Graph grammars as a generative tool in image understanding. In H. Ehrig, M. Nagl, G. Rozenberg, et al., editors, *Graph Grammars and Their Application to Computer Science*, volume 153 of *Lecture Notes in Computer Science*, pages 8–19. Springer-Verlag, 1983.
401. H. Bunke and G. Allermann. A metric on graphs for structural pattern recognition. In *Proc. 2nd European Signal Processing Conference EUSIPCO*, pages 257–260, 1983.
402. H. Bunke, G. Sagerer, and H. Niemann. Model based analysis of scintigraphic image sequences of the human heart. In T. Huang et al., editors, *Image Sequence Processing and Dynamic Scene Analysis*, pages 725–740. Springer-Verlag, 1983.
403. H. Bunke et al. Smoothing, Thresholding and Contour Extraction in Images from Gated Blood Pool Studies. In *Proc. 1st IEEE Com. Soc. Int. Symposium on Medical Imaging and Image Interpretation*, pages 146–151, Berlin, 1982.
404. H. Bunke. Experience with several methods for the analysis of schematic diagrams. In *Proc. 6th International Conference on Pattern Recognition*, pages 710–712, Munich, 1982.
405. H. Bunke. Automatic interpretation of lines and text in circuit diagrams. In J. Kittler, K.S. Fu, and L.F. (eds.) Pau, editors, *Pattern Recognition Theory and Applications. Proc. NATO Advanced Study Institute*, pages 297–310, Oxford, 1982. D. Reidel Publishing Company.
406. H. Bunke. Programmierte Graph-Grammatiken zur Repräsentierung des a priori Wissens für die Interpretation von Linienzeichnungen. In B. (ed.) Radig, editor, *Modelle und Strukturen, DAGM-Symposium*, volume 49 of *Informatik Fachberichte*, pages 164–270. Springer-Verlag, Hamburg, 1981.
407. H. Bunke. Structural and syntactic methods for the interpretation of electrical schematics. In *Report of the Workshop on Structural and Syntactic Pattern Recognition*, pages 53–54, Saratoga Springs, N.Y., USA, 1981.
408. H. Bunke and G. Allermann. Probabilistic relaxation for the interpretation of electrical schematics. In *Proc. IEEE Comp. Soc. Conference on Pattern Recognition and Image Processing*, pages 438–440, Dallas, Texas, USA, 1981.
409. H. Bley and H. Bunke. Computer recognition of circuit diagrams. In *Proc. 1st International Workshop on Natural Communication with Computers*, pages 5–7, Warschau, 1980.

410. H. Bunke. Analyse elektrischer Schaltplaene mit einfachen Schaltsymbolen. In *Bildverarbeitung und Mustererkennung, DAGM Symposium, Informatik Fachberichte*, volume 17, pages 126–132, Oberpfaffenhofen, 1978. Springer-Verlag.
411. H. Bunke. Programmed Graph Grammars. In *Proc. Int. Workshop on Graph-Grammars and Their Application to Computer-Science and Biology*, pages 155–166, Bad Honnef, 1978.
412. W. Brendel, H. Bunke, and M. Nagl. Syntaxgesteuerte Programmierung und inkrementelle Compilation. In H. J. Schneider, editor, *Tagungsband der GI, Tagungsband der GI, Informatik Fachberichte*, volume 10, pages 57–73, Berlin, 1977. Springer-Verlag.

Unreviewed Papers and Technical Reports

1. M. Basu, H. Bunke, and A. Del Bimbo. Guest editor's introduction to the special section on syntactic and structural pattern recognition. *Special Section of IEEE Trans. PAMI*, 27(7):1009–1012, 2005.
2. X. Jiang and H. Bunke. Preface. *Pattern Recognition Letters*, 22:445–446, 2001.
3. M. Zimmermann and H. Bunke. Hidden Markov model length optimization for handwriting recognition systems. Technical Report IAM-01-003, Institute of Computer Science and Applied Mathematics, University of Bern, Switzerland, 2001.
4. M. Zimmermann and H. Bunke. Automatic segmentation of the IAM off-line database for handwritten English text. Technical Report IAM-01-004, Institute of Computer Science and Applied Mathematics, University of Bern, Switzerland, 2001.
5. K.Y. Lim, S. Venkatesh, M. Kumar, and H. Bunke. Using clustering for change detection in dynamic communication networks. Technical Report, School of Computing, Curtin University, Perth, Australia, 2000.
6. S. Fischer, M. Binkert, and H. Bunke. Feature based retrieval of diatoms in an image database using decision trees. Technical Report IAM-00-001, Institute of Computer Science and Applied Mathematics, University of Bern, Switzerland, 2000.
7. K. Yu, X. Jiang, and H. Bunke. A new approach to lipreading using time-varying signal analysis. Technical Report IAM 98-001, Institute of Computer Science and Applied Mathematics, University of Bern, Switzerland, 1998.
8. U.V. Marti, G. Kaufmann, and H. Bunke. Der Computer lernt Handschriften lesen. *Technische Rundschau*, 27/28:26–30, 1997.
9. T.M. Ha and H. Bunke. Off-line handwritten numeral string recognition. Technical Report IAM-97-003, Institute of Computer Science and Applied Mathematics, University of Bern, Switzerland, 1997.
10. H. Bunke and R. Liviero. Classification and postprocessing of documents using an error-correcting parser. Technical Report IAM-96-001, Institute of Computer Science and Applied Mathematics, University of Bern, Switzerland, 1996.
11. B. Achermann and H. Bunke. Combination of classifiers on the decision level for face recognition. Technical Report IAM-96-002, Institute of Computer Science and Applied Mathematics, University of Bern, Switzerland, 1996.
12. B.T. Messmer and H. Bunke. Fast error-correcting graph isomorphism based on model precompilation. Technical Report IAM-96-012, Institute of Computer Science and Applied Mathematics, University of Bern, Switzerland, 1996.
13. T. M. Ha and H. Bunke. Design, implementation, and testing of perturbation method for handwritten numeral recognition. Technical Report IAM-96-014, Institute of Computer Science and Applied Mathematics, University of Bern, Switzerland, 1996.
14. X. Jiang and H. Bunke. Robust edge detection in range images based on scan line approximation. Technical Report IAM-96-016, Institute of Computer Science and Applied Mathematics, University of Bern, Switzerland, 1996.
15. A. Hoover, G. Jean-Baptiste, X. Jiang, P. Flynn, H. Bunke, D. Goldgof, and K. Bowyer. A comparison of range image segmentation algorithms. Technical Report, Department of Computer Science and Engineering, University of South Florida, USA, 1995.

16. B.T. Messmer and H. Bunke. Subgraph isomorphism in polynomial time. Technical Report IAM 95-003, Institute of Computer Science and Applied Mathematics, University of Bern, Switzerland, 1995.
17. H. Bunke, M. Roth, and E.G. Schukat-Talamazzini. Off-line cursive handwriting recognition using hidden Markov models. Technical Report IAM 94-008, Institute of Computer Science and Applied Mathematics, University of Bern, Switzerland, 1994.
18. T. M. Ha and H. Bunke. Text localisation and handwriting recognition: Application to numeral extraction and recognition. Technical Report IAM 94-011, Institute of Computer Science and Applied Mathematics, University of Bern, Switzerland, 1994.
19. X. Jiang and H. Bunke. Symmetries of polyhedra: Detection and applications. Technical Report IAM 94-012, Institute of Computer Science and Applied Mathematics, University of Bern, Switzerland, 1994.
20. H. Christensen, K. Bowyer, and H. Bunke. Editorial. In H. Christensen, K. Bowyer, and H. Bunke, editors, *Active Robot Vision*, pages 1–9. World Scientific, Singapore, 1993.
21. X. Y. Jiang and H. Bunke. Quantization error analysis in range sensing by active triangulation. Technical Report IAM 93-002, Institute of Computer Science and Applied Mathematics, University of Bern, Switzerland, 1993.
22. X. Y. Jiang and H. Bunke. Vision planner for an intelligent multisensory vision system. Technical Report IAM 93-017, Institute of Computer Science and Applied Mathematics, University of Bern, Switzerland, 1993.
23. B. T. Messmer and H. Bunke. A network based approach to exact and inexact graph matching. Technical Report IAM 93-021, Institute of Computer Science and Applied Mathematics, University of Bern, Switzerland, 1993.
24. H. Bunke. A fast algorithm for finding the nearest neighbor of a word in a dictionary. Technical Report IAM 93-025, Institute of Computer Science and Applied Mathematics, University of Bern, Switzerland, 1993.
25. H. Rösler, H. Bunke, F. Grimm, and X. Fabregas. Ein Expertensystem für die Schilddrüsendiagnostik. *Computerhilfe für den Facharzt*, 5:49–56, 1992.
26. H. Kaiser, R. Bach, and H. Bunke. Proc. 3rd annual meeting of the swiss group for artificial intelligence and cognitive science. Technical Report IAM 92-004, Institute of Computer Science and Applied Mathematics, University of Bern, Switzerland, 1992.
27. X.Y. Jiang and H. Bunke. Fast segmentation of range images into planar regions by scan line grouping. Technical Report IAM 92-006, Institute of Computer Science and Applied Mathematics, University of Bern, Switzerland, 1992.
28. H. Bunke and J. Csirik. Parametric string matching and its application to pattern recognition. Technical Report IAM 92-007, Institute of Computer Science and Applied Mathematics, University of Bern, Switzerland, 1992.
29. H. Bunke and T. Glauser. Affine invariant representation and recognition of polygonal faces in 3-d space using edge length ratios. Technical Report IAM 92-014, Institute of Computer Science and Applied Mathematics, University of Bern, Switzerland, 1992.
30. H. Bunke. Abstracts of the IAPR workshop on structural and syntactic pattern recognition. Technical Report IAM 92-017, Institute of Computer Science and Applied Mathematics, University of Bern, Switzerland, 1992.

31. T. H. Minh and H. Bunke. Analysis and understanding of GIRO check forms. Technical Report IAM 92-021, Institute of Computer Science and Applied Mathematics, University of Bern, Switzerland, 1992.
32. X. Jiang and H. Bunke. Optimal vertex ordering of a graph. Technical Report IAM 91-002, Institute of Computer Science and Applied Mathematics, University of Bern, Switzerland, 1991.
33. T. Glauser, T.-H. Tran, and H. Bunke. Efficient matching of dynamically changing graphs. Technical Report IAM 91-009, Institute of Computer Science and Applied Mathematics, University of Bern, Switzerland, 1991.
34. H. Bunke. Computersehen wird industriereif. *Technische Rundschau*, 38:136–143, 1990.
35. H. Bunke and H.-S. Lim. Location of polyhedral objects with minimal number of edge points. Technical Report, IBM Corporation, Palo Alto Scientific Center, Palo Alto, 1990.
36. F. Grimm and H. Bunke. Ein Expertensystem für den Einsatz von Software-Paketen. *Technische Rundschau*, 2:46–49, 1990.
37. J. Dvorak and H. Bunke. Implementation of a hybrid computer vision tool using CLOS. Technical Report IAM 90-002, Institute of Computer Science and Applied Mathematics, University of Bern, Switzerland, 1990.
38. X. Jiang and H. Bunke. Determining the symmetry of polyhedra. Technical Report IAM 90-003, Institute of Computer Science and Applied Mathematics, University of Bern, Switzerland, 1990.
39. H. Bunke. Sehende Computer. *Unipress*, 62:76–79, 1989.
40. H. Bunke and M. Stolze. Künstliche Intelligenz in der technischen Praxis. *Technische Rundschau*, (14):44–49, 1989.
41. H. Bunke and M. Stolze. INDEX – ein expertenwartbares Diagnosesystem für Kuvertiermaschinen. In *Hasler-Mitteilungen*, volume 4, pages 7–12. Bern, 1988.
42. H. Bunke and E. Gmür. Automatische Erkennung von dreidimensionalen Objekten. *SEV/ASE Bulletin*, 15:914–920, 1988.
43. H.P. Ludin, F. Conti, H. Bunke, and F. Flückiger. Probleme bei der Entwicklung von Expertensystemen für die Klinik aus der Sicht des Mediziners. In *Proc. IBM-Seminar "Education Technologies"*, pages 1–7, Zürich, 1987.
44. H. Bunke. Künstliche Intelligenz und Expertensysteme, Grundlegende Methoden. In H. Bunke and H. Mey, editors, *Künstliche Intelligenz und Expertensysteme*, pages 25–35. Verlag Lang, Bern, 1987.
45. H. Bunke. Künstliche Intelligenz und Expertensysteme: Grundlegende Begriffe, Anwendungen und zukünftige Perspektiven. In H. Bunke and H. Mey, editors, *Künstliche Intelligenz und Expertensysteme*, pages 11–24. Verlag Lang, Bern, 1987.
46. H. Bunke and A. Sanfeliu. Introduction to special issue. In H. Bunke and A. Sanfeliu, editors, *Special Issue on Advances in Syntactic Pattern Recognition*, volume 19 of *Pattern Recognition*. 1986.
47. H. Bunke. Künstliche Intelligenz – Einige einführende Bemerkungen. In *Backup*, volume 1, pages 23–25. 1986.
48. H. Bunke. Künstliche Intelligenz: gegenwärtige und zukünftige Perspektiven. *DECUS (Switzerland) Newsletter*, (16):12–15, 1985.

49. H. Bunke. What is the distance between graphs? *Bulletin of the EATCS*, 20:35–39, 1983.
50. H. Bunke. Graph grammars as a generative tool in image understanding. *Osnabrücker Schriften zur Mathematik*, 1(6):11, 1982.
51. H. Bunke and G. Sagerer. Automatische Analyse von Sequenzszintigrammen des menschlichen Herzens. In *Zusammenfassungen des Seminars "Automatische Analyse von Bildfolgen"*. Karlsruhe, 1982.
52. H. Bunke. Representation of control in parallel programmed grammars. *Bulletin of the EATCS*, 16:13–22, 1982.
53. H. Bunke. Analyse elektrischer Schaltpläne. In *Arbeitsberichte des IMMD*, volume 14, pages 53–63. Universität Erlangen-Nürnberg, 1981.
54. H. Bunke. Understanding of line drawings by computer. In H. Niemann, editor, *Pattern Recognition (Research at Lehrstuhl für Informatik 5)*, volume 14 of *Arbeitsberichte des IMMD*. Universität Erlangen-Nürnberg, 1981.
55. H. Bunke. Attributed programmed graph grammars as a tool for image interpretation. Technical Report TR-EE 81-22, Purdue University, West Lafayette, USA, 1981.
56. H. Bunke. Graph rewriting systems as a tool for transforming descriptions of line drawings. *Bulletin of the EATCS*, 12:46–50, 1980.
57. H. Bunke. Understanding electrical schematics by means of iterative methods. Technical Report TR-EE 80-56, Purdue University, West Lafayette, USA, 1980.
58. H. Bunke. Computer recognition of circuit diagrams. Technical Report TR-EE 80-54, Purdue University, West Lafayette, USA, 1980.
59. H. Bunke. Sequentielle und programmierte Graph-Grammatiken. In *Arbeitsbericht des IMMD*, volume 12. IMMD, Universität Erlangen-Nürnberg, 1979. Dissertation.
60. H. Bunke. Syntaktische Methoden im Bereich der Bildanalyse. In *Interner Bericht, Arbeitsberichte. Erlangen-Nuernberg, U. and (Mustererkennung), I. 5.*, Erlangen, 1977.
61. H. Bunke. Beschreibung eines syntaxgesteuerten inkrementellen Compilers durch Graph Grammatiken. In *Arbeitsbericht des IMMD*, volume 7. Universität Erlangen-Nürnberg, 1974. Diplomarbeit.